AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

ORANGE JUDD & CO., PUBLISHERS AND PROPRIETORS. Office, 245 BROADWAY.

ESTABLISHED IN 1842.
Published also in German at $1.50 a Year.

$1.50 PER ANNUM, IN ADVANCE. SINGLE NUMBER, 15 CENTS. 4 Copies for $5; 10 for $12; 20 or more, $1 each.

Entered according to Act of Congress, in May, 1873, by ORANGE JUDD & Co., at the Office of the Librarian of Congress, at Washington.

VOLUME XXXII.—No. 6. NEW YORK, JUNE, 1873. NEW SERIES—No. 317.

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HEADS OF THOROUGHBRED BULLS.—(*See page* 211.)—*Drawn by Edwin Forbes for the American Agriculturist.*

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Calendar for June.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n sets.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	S	4 26	7 30	0 10	4 32	7 24	0 5	4 37	7 19	morn
2	M	4 25	7 31	0 33	4 31	7 25	0 34	4 37	7 19	0 30
3	T	4 25	7 32	1 1	4 31	7 26	1 0	4 36	7 20	0 57
4	W	4 24	7 32	1 23	4 30	7 26	1 22	4 36	7 20	1 21
5	T	4 24	7 33	1 42	4 30	7 27	1 42	4 36	7 21	1 42
6	F	4 23	7 33	2 2	4 29	7 27	2 3	4 35	7 21	2 4
7	S	4 23	7 34	2 23	4 29	7 28	2 25	4 35	7 22	2 27
8	S	4 23	7 35	2 49	4 29	7 29	2 52	4 35	7 23	2 56
9	M	4 22	7 35	rises	4 28	7 29	rises	4 34	7 23	rises
10	T	4 22	7 35	7 46	4 28	7 30	7 40	4 34	7 24	7 34
11	W	4 22	7 36	8 57	4 28	7 30	8 51	4 34	7 24	8 44
12	T	4 22	7 37	9 54	4 28	7 31	9 48	4 34	7 25	9 41
13	F	4 22	7 37	10 43	4 28	7 31	10 37	4 34	7 25	10 31
14	S	4 22	7 38	11 21	4 28	7 32	11 16	4 34	7 26	11 12
15	S	4 22	7 38	11 52	4 28	7 32	11 49	4 34	7 26	11 46
16	M	4 22	7 38	morn	4 28	7 32	morn	4 34	7 26	morn
17	T	4 22	7 39	0 20	4 28	7 33	0 18	4 34	7 27	0 16
18	W	4 22	7 39	0 43	4 28	7 33	0 42	4 34	7 27	0 42
19	T	4 22	7 39	1 7	4 28	7 33	1 8	4 34	7 27	1 9
20	F	4 22	7 39	1 31	4 28	7 33	1 33	4 34	7 27	1 36
21	S	4 23	7 39	1 58	4 29	7 34	2 2	4 35	7 28	2 6
22	S	4 23	7 39	2 30	4 29	7 34	2 35	4 35	7 28	2 40
23	M	4 23	7 40	3 9	4 29	7 34	3 15	4 35	7 28	3 21
24	T	4 23	7 40	sets	4 29	7 34	sets	4 35	7 28	sets
25	W	4 23	7 40	8 52	4 29	7 34	8 45	4 35	7 29	8 38
26	T	4 23	7 40	9 38	4 29	7 35	9 27	4 35	7 29	9 21
27	F	4 24	7 40	10 9	4 30	7 35	10 4	4 36	7 29	9 59
28	S	4 24	7 40	10 39	4 30	7 35	10 35	4 36	7 29	10 31
29	S	4 24	7 40	11 4	4 30	7 35	11 1	4 36	7 29	18 58
30	M	4 25	7 40	11 26	4 31	7 35	11 24	4 37	7 29	11 23

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
1st Quart	8	1 35 m.	1 28 m.	1 11 m.	0 59 m.	0 29 m.
Full M'n	10	5 17 ev.	5 5 ev.	4 53 ev.	4 41 ev.	4 11 ev.
3d Quart.	17	10 48 m.	10 36 m.	10 24 m.	10 12 m.	9 42 m.
New M'n	24	4 28 ev.	4 16 ev.	4 4 ev.	3 52 ev.	3 22 ev.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1873.

To a good, thrifty farmer, whose land is drained, clean, and rich, June is one of the pleasantest months in the year. To the farmer who is behindhand with his work, who is planting corn when he ought to be cultivating it, and who is hoeing when he should be haying, the warm, growing weather of June gives little ground for hope or encouragement. "A stern chase is a long chase." If the season once gets ahead of you, it is almost impossible to catch up with your work. Every farmer knows this from experience, but it is a lesson some of us are slow to learn.

In chaffing hay with a railway horse-power, set at a given elevation, the lighter you feed the faster will the horses be obliged to travel, and the more hay will you cut. If the knives are dull, or you feed a little too fast, you slow the motion, and you will not accomplish half the work that you would if the knives were sharp and you fed lighter. Push the hay into the machine a little faster, and you lessen your power still more, and the slightest impediment, even a single corn-stalk, will stop it altogether. And so it is with farm work. If you get behindhand, the least impediment will check your progress. The "season" is the railway horse-power. The less you tax it the more it will do for you. Men, ignorant of the principle of a railway horse-power, when they find the motion slowing yell at the horses—"Get up there, get up"—not knowing that the horses are in no wise to blame, but that the fault is in their feeding too hard.

To grumble at the season is equally unreasonable. A man who keeps his machine well oiled and the knives sharp, and who feeds steadily, will cut three times as much hay as the man who wastes one-third of his power by dull knives and unnecessary friction and another third by slowing the motion. And so it is in farming. On drained land a soaking rain makes easier plowing; on the wet land it stops plowing altogether, and by the time the sun has evaporated the water the land is hard to plow, and turns up cloddy. The season is not at fault. No season ever suits wet land. The remedy is either to drain or not plow at all. We need not carry out our illustration. We all know how discouraging a thing it is to work poor, weedy, undrained land. No farmer on such land can be blamed for being behindhand with his work. He is to blame only if he is content with such a system of farming, and makes no efforts to drain, enrich, and clean his land.

Hints about Work.

The Season is Late, and much land is yet to be planted.

What shall we do with it?—No farmer likes to change his plans, but it is sometimes, though not often, wise to do so.

Land Intended for Corn, but which you have not been able to plant, may be summer-fallowed; or it may be planted with beans, or sown with turnips or buckwheat; or if none of these plans suit it may still be planted with corn.

Early Corn is best for late planting.

Soak the Seed for 24 or 36 hours, changing the water every eight or ten hours.

If the Soil is Moist and Mellow, soaked seed will be up in two days, and the plants, now that the weather is warm, will grow rapidly from the start.

One of the Essentials of good corn culture is thus secured—a vigorous and healthy young plant.

If the Ground can not be got in Good Condition, better give up the idea of planting corn. It is a crop that requires too much labor to make its culture profitable except under favorable conditions.

With Potatoes there is even a still greater necessity for planting at the proper time, and for having the land in good order. It is a crop that requires much labor *per acre*, and it is specially important to get a large crop per acre. It will cost as much to plant, cultivate, and dig an acre of potatoes that yields 75 bushels per acre as one that yields 150 bushels.

One of the Best Crops of Potatoes we ever raised was not planted until the first week in June—but the land was rich and in good order.

Beans have been a very profitable crop with farmers who make a business of growing them, and who take pains to have all the conditions favorable. They may be sown any time this month—the earlier the better, provided the land is in good order. We plant in rows 2 ft. 5 in. apart, and drop three to five beans in a hill one foot apart in the rows. Cover from one to two inches deep, according to the size of the beans—the larger the deeper.

Turnips require rich soil and the best of culture. The reason so many fail to grow satisfactory crops of roots is because the land is not properly prepared. The soil can not be made too mellow.

Mangel-Wurzel should have been sown last month, but if the land is in good order, and not too dry, the seed may be soaked for two or three days, and when this is done it is not too late to sow this crop.

Ruta-Bagas or Swede Turnips may be sown any time this month. If possible, drill them in *immediately* after the last plowing. Use plenty of seed, say two pounds per acre. Thin out as soon as the plants are in the rough leaf.

The Best Remedy for the "Fly" or Beetle is good, moist, mellow soil, and a dressing of 200 lbs. of superphosphate of lime per acre. The latter has a wonderful effect in pushing the young plants.

Dusting the Plants with Slaked Lime, plaster, and ashes in the morning, while the dew is on, will check the ravages of the beetle and otherwise benefit the crop.

Air-Slaked Lime is good for this purpose, but, contrary to common opinion, it is no better than fresh water-slaked lime—and, in fact, if there is any difference, the latter is the more caustic. Three bushels of lime, two bushels of plaster, and ten bushels of wood-ashes would be about the proper quantity per acre—but more will do no harm. The ashes must be dry, so that they will adhere to the leaves. If you have not ashes, put on lime and plaster alone.

Killing Weeds is the great labor of the month. And let it be understood that unless the season is

unusually wet the farmer who does not keep down the weeds deserves all the evils that flow from foul land and poor crops.

We have the Best Climate in the World for killing weeds, but few of us live up to our privileges.

A Good Cultivator, aided by our dry winds and hot sun, will kill young weed plants by the million. The main thing is to commence early before the weeds get possession of the soil, and continue to stir the soil as often as any new weeds appear.

A Harrow on mellow soil, and while the weeds are in the seed-leaf, is often a more effective implement for killing weeds than an ordinary cultivator. It leaves the young plants more on the surface, where the sun can wither them up and destroy their vitality.

In Corn and Potatoes we have used the Thomas harrow with decided advantage. It may pull up or smother a few hills of corn, but such a loss is nothing as compared with the saving in hoeing. We are not sure that a light harrow, with fine, straight teeth would not be equally effective.

Corn will probably be much higher next year than at present, and it will be well to take good care of the growing crop. All that can now be done is to cultivate it thoroughly.

Stirring the Soil, unless it is a very light sand, tends to keep it moist. It develops plant-food, and makes the land richer. It kills weeds, and it is now well known that so far from "shading the ground and keeping it moist," all growing plants pump up and evaporate large quantities of water.

Summer-Fallows are rarely necessary on light, sandy soils. We can kill the weeds by the frequent use of the cultivator in corn, potatoes, beans, and other hoed crops.

On Heavy Clay Land, a *good* summer-fallow will often prove one of the best means of cleaning the soil and enriching it at the same time. On such land it is usually better to plow two or three times rather than to plow only once, and depend on the cultivator to keep down weeds and mellow the surface. It is true that many good farmers adopt the latter practice with decided advantage for the time being. Whatever plan is adopted, make as many weeds grow as possible, and *then kill them.*

Get Ready for Haying.—See that the mower is in complete repair, and if any extras are required order at once. Look to the rakes, hay-racks, unloading fork and tackle.

Early Cut Hay is confessedly better for milk-giving animals than ripe hay. For new milch-cows and ewes with lambs it is very desirable to cut a few tons of clover just before it gets into full blossom. It will not yield as much per acre as if allowed to stand until the blossoms begin to turn brown, and the hay *may* not be so nutritious for fattening stock, but it is more succulent and more easily digested, and when fed in connection with a little meal will produce more milk.

Keep the Implements Under Cover, or if this can not be done wash or paint them with petroleum. Saturate all the wood-work. The more you can get it to absorb the better.

Animals in the hurry of a busy season are apt to be neglected. Do not fall into this error. The success of a good farmer depends more on his skill and judgment in the management of his live-stock than on the mere raising of crops.

Horses should not be taxed beyond their strength. Heavy plowing should be done with three horses abreast. It is a very effective team. We keep horses too long in the field. They would accomplish more by working steadily while at work, and being allowed longer to feed and rest in the stable.

Grooming is of great importance. It is to a horse what a good bath is to a man. It is absolutely essential to high health. Never leave a horse for the night until he is thoroughly cleaned.

A Little Meal in the Water is a capital thing for horses at noon, and night when they come home tired—say a pint of meal in a pail of water.

In case of Colic, the first thing to do is to give an injection of water. It is not necessary to put soap or anything else in it. Blanket the horse, rub his legs, ears, and bowels, and if he does not get better in half an hour give a table-spoonful of laudanum and two table-spoonfuls of ether.

Cut Feed is certainly more economical than uncut. Whether it is healthier or otherwise depends much on whether the horses are allowed to rest after eating.

Indigestion is the cause of more than half the diseases of horses, and we should be careful to feed properly and regularly, and especially to avoid putting the horses to hard work on a full stomach.

Milch-cows should now be giving a full flow of milk. If there is the slightest symptoms of a falling off, give a little extra feed in the form of corn-meal and bran-slops. Corn is cheap, and if the cows can convert one, two, or three quarts of meal into milk it will be very profitable. See that the cows are milked regularly and clean.

Sheep should have their hoofs pared, and every sheep in the flock have its feet dressed with carbolic acid to prevent foot-rot. Dip the lambs, after the ewes are sheared, in a solution of carbolic soap to kill ticks. The ewes and lambs should have the best pasture on the farm—but let it be dry upland. Low land is death to sheep. Suckling ewes, especially, require constant access to water. Have a pen in the field into which the lambs can enter, and feed them a few oats or other grain separately from the ewes. It is a great help to them.

Scours in Lambs indicate that the flock needs a change of pasture. Always let sheep have access to a little dry hay. They will eat it if they need it, and it will do them a great deal of good. Milk-porridge, made with wheat-flour and milk—say a pint of fresh skimmed milk and a table-spoonful of flour, *well boiled*—is a capital remedy for mild cases.

Do not neglect to tag the lambs whenever needed. Salt regularly, or better still, let the sheep have access at all times to the salt. They will then never eat enough to scour them.

Swine are looking up. In the great corn-growing sections of the country there is no stock that pays so well at present prices as good pigs, and the prospects are favorable for a considerable advance. Feed liberally. Nothing is better than a good clover pasture; but it is a great mistake not to give grain in addition. Save all the milk for the young pigs. Pigs five or six months old get along very well without milk, but for young pigs, two to four months old, there is nothing so good as skimmed milk. Give more or less grain in addition. Push the little pigs all you can. It will pay. See that all swine have access to fresh water. If confined, give ashes, salt, sulphur, and charcoal. Keep the pens and troughs clean. Dry earth is a cheap disinfectant. Use it freely.

Work in the Horticultural Departments.

The late spring has crowded much work into this month which ought to have been attended to last, and many gardeners have been late in planting in both the orchard and garden. The hot weather of summer is, however, now upon us, and so sudden has been its advent that a great deal of effort will be necessary in order to keep pace with the season. Weeds are sure to surpass the vegetables in growth, and a continual contest must be waged against them in order to prevent injury to the young seedlings. If the soil was kept free from weeds during the last season, less trouble will be needed to prevent their growth this. The ground is now so thoroughly warmed through that seeds sown in it will germinate at once, and it is not yet too late to sow some varieties of flower and vegetable seeds, and get a good return from them. Many early vegetables and fruits will now be ready for use, and flowering plants will make the garden attractive.

Orchard and Nursery.

Grafts set in the spring will need attention, and where more than one was put in remove the extra ones if necessary.

Pruning.—Many fruit-growers prefer June for cutting out large limbs, as wounds made now heal very readily, while others contend that too much foliage is removed so that growth is checked. If the trees were properly pruned when young they will not require a great amount of cutting now.

Thinning is seldom practiced to any extent in this country, and the result is that trees seldom bear good crops two years in succession. If one third or one half of the fruit is thinned out after it has fairly set, the remainder will be of good size and really first-class fruit, and a much higher price will be realized from this than if the whole had been allowed to grow.

Pinching the growing shoots of a young tree will give the weaker ones a chance to grow, and thus secure for it a good shape.

Young trees will need special care in trimming in order to avoid too vigorous growth, and the consequent necessity of severe pruning when large. If they were planted out this spring give a mulch so that they may not dry out when the hot weather of midsummer comes.

Seedlings require a good deal of attention in order to keep them growing vigorously, and to keep down the young weeds.

Slugs.—If troublesome upon the leaves of pear and cherry trees destroy by a dusting of lime.

Insects must not be neglected, and a constant look-out must be kept for all enemies upon the fruit-trees. If a tent-caterpillar's web appears destroy at night or in the morning; if on a small twig the best way is to cut off the twig and burn; when upon a large limb remove the nest with a gloved hand.

Curculio.—Where this pest exists the only way to fight it is to spread a sheet under the tree and jar the tree and catch the insects upon it, when they may be burned or put into boiling water.

Borers.—The most effective way to prevent them from laying their eggs, which are usually laid this month, is to wrap the trunk with coarse paper, with the lower edge just below the surface of the soil.

Fruit Garden.

Blackberries.—The fruiting canes should be tied up to stakes, and all suckers not needed hoed up. Pinch the ends of the new canes when they have reached a height of 4 or 5 feet.

Raspberries.—Remove all but 3 or 4 new shoots from each plant, and tie up to stakes or wires.

Dwarf Fruit-Trees will need attention to insure a good form. Thin out the fruit, and pinch those shoots which grow too vigorously.

Gooseberries are most profitable when marketed green. The fruit may be cleared of leaves and sticks by rolling it down an inclined trough.

Grape-Vines planted this spring should only be allowed to grow one shoot. Thin out a portion of the fruit on the bearing vines; this should be done early so that the vines may not be exhausted. Apply sulphur with a bellows on the first appearance of mildew. Layers may be made of the present season's growth.

Currants.—A good mulch will save time in weeding, and also increase the size of the fruit. Apply powdered white hellebore to the leaves when attacked by the currant worm.

Strawberries if not already mulched should be attended to at once, so that the fruit may be kept free from grit. Keep newly planted beds free from weeds and hoed often to insure a good growth before the hot weather comes.

Kitchen Garden.

The great enemies of the gardener as well as farmer, viz., weeds, should be destroyed at the outset, as when young they may be easily kept down if the ground is constantly stirred. One of the best and most effective implements in use is the wheel-hoe described in December, 1871. A rake is also a very excellent implement when used just as the weeds have shown themselves above ground.

Asparagus.—Do not cut too long, and remember

that next year's crop is dependent upon a good growth of tops after the cutting has stopped. Keep down the weeds, and put on bone or phosphate.

Beans.—It is not yet too late to plant bush sorts for late snaps, and Limas may now be planted with good prospects for a crop should the frost not come too early in the fall. Set the poles 4 feet apart each way, and give the hills a liberal dressing of well rotted manure.

Beets.—Weed and use the thinnings as spinach.

Cabbages and Cauliflowers.—The early sorts will now be ready for table or market. Sow seed for late, and transplant from the seed-beds to open ground for second early.

Carrots sown early should be hoed and thinned, and seed sown for the late crop.

Celery.—See that the plants in the seed-bed are kept clear of weeds.

Corn.—Sow every two weeks for a succession, using only early sorts for the late sowings.

Peppers.—Set out in a warm, rich place, and cultivate frequently.

Cucumbers.—Sow seeds in hills four feet apart, using plenty of seeds to allow for those plants destroyed by the bugs.

Egg-Plants.—Do not plant out until settled warm weather. Give frequent hoeing, and occasional waterings of liquid manure.

Lettuce.—It is of little use to sow seed now unless one has a cool situation where the sun does not fall upon the plants for long at a time.

Onions.—Constant hoeing and weeding are necessary in order to insure a good crop, and a dressing of wood-ashes is very beneficial.

Parsnips.—Cultivate until the leaves cover the ground so as to prevent working.

Peas may be planted now, though they are likely to mildew.

Rhubarb.—Cut off all flower-stalks as they soon exhaust the plants.

Ruta-bagas. Sow seed in well manured drills the latter part of the month, and if insects appear sift ashes or plaster upon the young plants. The Long White French is best for table use.

Spinach.—Sow New Zealand for summer use; make the hills 4 feet apart in rich soil allowing three or four plants to each hill.

Salsify and Scorzonera.—Cultivate the same as parsnips.

Sweet-Potatoes.—Prepare the ridges as directed last month, and set out the plants at once. Keep them growing, and do not allow the vines to root.

Tomatoes.—Provide same kind of support for the vines to grow upon, and cut back freely; the fruit will be much finer than if the vines are allowed to grow at will.

Flower-Garden and Lawn.

In this department there will be plenty to do in order to keep everything looking neat.

Lawns will require cutting every week or ten days in order to present a good appearance. It is best to leave the clippings upon the lawn as they will serve in a measure to protect the roots of the grass from the sun; if cut often the cut grass will not be seen for more than a day at most.

Bedding Plants must be attended to, as the weather has now become so mild that they will grow at once if planted out, provided they have been properly hardened off before removing from the greenhouse.

Annuals.—Transplant from the seed-bed and sow seed for succession at once.

Bulbs should not be removed until the leaves begin to turn yellow, when they may be taken up and spread under cover to dry; when perfectly dry store in a cool, dry place until next fall.

Walks.—Keep the grass edgings at the sides of the walks and drive-ways cut and trimmed. The walks should be kept clear of weeds, and rolled occasionally to preserve the firmness.

Neatness.—The various surroundings of the house and lawn must be kept neat in order to preserve a good appearance. Plants should be tied to stakes, and all unsightly flower-stalks removed.

Greenhouse and Window-Plants.

Unless a great deal of care is used in removing plants to the borders, the greenhouse will not present a very attractive sight during the summer. There are, however, many plants which will prove much more satisfactory if kept inside, and with a little pains an excellent show may be made. If any plants are plunged in the border, place a little coal-ashes under the pot to prevent the worms from entering. Look out for a good supply of sods to stack up to decay and form soil to be used for potting.

Commercial Matters—Market Prices.

Gold has been as low as 116⅝, and as high as 118⅝—closing May 12th at 118⅛, as against 119 on April 12th. .....There has been more activity in Breadstuffs since our last. The home trade inquiry has been fair, and the export demand good. Holders have been offering stocks quite freely, and prices in most instances have been quoted lower. Toward the close, desirable lots of shipping Flour, prime Wheat and Oats, dry samples of Corn and Rye, were quoted steadier in price, with more call for prompt delivery. Barley has declined materially, and closed dull.....Cotton has been easier in price and a restricted business.....Wool has been more active, but at low rates. Holders have shown considerrble eagerness to market supplies of both domestic and foreign. Toward the close the market was rather steadier, on less urgent offerings of stock.....Provisions have been quoted cheaper on a less active trade.. .....Tobacco, Hay, Straw, and Seeds, have been moderately sought after.....Hops dull at reduced quotations.

CURRENT WHOLESALE PRICES

	April 12.	May. 13.
PRICE OF GOLD.....	119	118⅝
FLOUR—Super to Extra State	$6 00 @ 8 25	$5 65 @ 8 25
Super to Extra Southern....	6 10 @12 75	6 00 @12 50
Extra Western.....	6 90 @12 75	6 65 @12 50
Extra Genesee.....	8 30 @10 50	8 25 @10 50
Superfine Western.....	6 00 @ 6 60	5 65 @ 6 25
RYE FLOUR.....	4 10 @ 6 00	4 10 @ 6 00
CORN-MEAL.....	3 00 @ 3 75	3 15 @ 3 75
WHEAT—All kinds of White.	1 85 @ 2 25	1 85 @ 2 30
All kinds of Red and Amber.	1 35 @ 2 00	1 30 @ 2 05
CORN—Yellow.....	64 @ 66	68½@ 69½
Mixed.....	63 @ 65¼	67 @ 68½
OATS—Western.....	48 @ 56½	50 @ 56½
State.....	50 @ 56½	51 @ 56½
RYE.....	87 @ 93	95 @ 1 00
BARLEY.....	75 @ 1 35	70 @ 1 18
HAY—Bale, ₱ 100 lbs.....	1 00 @ 1 45	75 @ 1 50
STRAW, ₱ 100 lbs.....	55 @ 1 20	85 @ 1 10
COTTON—Middlings, ₱ lb....	19⅛@ 20⅜	19¼@ 20
HOPS—Crop of 1872, ₱ lb.....	40 @ 55	35 @ 50
FEATHERS—Live Geese, ₱ lb.	50 @ 75	65 @ 82½
SEED—Clover, ₱ lb.....	8¼@ 9	8¼@ 9
Timothy, ₱ bushel.....	3 50 @ 3 87	4 50 @ 4 60
Flax, ₱ bushel.....	2 20 @ 2 35	2 25 @ 2 40
SUGAR—Refi'g & Grocery ₱ lb	7½@ 10½	7¾@ 9¾
MOLASSES, Cuba, ₱ gal.....	30 @ 40	22 @ 45
New Orleans, ₱ gal.....	55 @ 75	55 @ 80
COFFEE—Rio (Gold).....	16¾@ 19½	17¾@ 19¾
TOBACCO, Kentucky, &c., ₱ lb.	7¾@ 15	7 @ 15
Seed Leaf, ₱ lb.....	9 @ 75	9 @ 75
WOOL—Domestic Fleece, ₱ lb	45 @ 60	32 @ 55
Domestic, pulled, ₱ lb.....	30 @ 52	28 @ 48
California, clip.....	18 @ 34	18 @ 33
TALLOW, ₱ lb.....	8¼@ 9	8¼@ 9
OIL-CAKE—₱ ton.....	39 50 @41 00	37 50 @41 00
PORK—Mess, ₱ barrel.....	16 50 @17 37½	17 00 @17 75
Prime, ₱ barrel.....	12 75 @13 00	Nominal.
BEEF—Plain mess.....	9 00 @11 00	9 00 @11 00
LARD, in trcs. & barrels, ₱ lb.	8¼@ 9	8¾@ 9¼
BUTTER—State, new ₱ lb.....	35 @ 47	30 @ 45
Western, ₱ lb.....	30 @ 40	25 @ 32½
CHEESE.....	9 @ 16¾	6 @ 16¾
BEANS—₱ bushel.....	2 00 @ 3 60	1 50 @ 3 00
PEAS—Canada, free, ₱ bu....	1 25 @ 1 35	1 85 @ 1 45
EGGS—Fresh, ₱ dozen	19½@ 21½	14½@ 16¾
POULTRY—Fowls.....	12 @ 24	14 @ 21
Turkeys—₱ lb.....	15 @ 24	13 @ 18
Geese, ₱ pair.....	2 00 @ 3 50	1 25 @ 2 50
Ducks, ₱ pair.....	1 00 @ 1 62½	75 @ 1 25
TURNIPS—₱ barrel	75@ 1 50	1 25 @ 2 50
CABBAGES—₱ 100.....	8 00 @14 00	8 00 @20 00
ONIONS—₱ bbl.....	9 50 @10 00	4 00 @ 7 00
BROOM-CORN—₱ lb.....	8 @ 7½	3 @ 7½
APPLES—new, ₱ barrel.....	1 00 @ 3 00	1 20 @ 3 50
POTATOES—₱ bbl.....	1 50 @ 3 62½	1 50 @ 3 50
SWEET POTATOES—₱ bbl.....	3 50 @ 4 00	3 75 @ 4 25
CARROTS—₱ bbl.....	3 00 @— —	3 50 @ 4 00
CELERY—₱ doz.....	1 50 @ 1 75	— @ —
CRANBERRIES—₱ bbl.....	— @ —	4 00 @ 6 00
STRAWBERRIES—₱ quart.....	— @ —	62 @ 75
POTATOES, new Bermuda ₱ bl	— @ —	8 @ 9 50
TOMATOES, " ₱ crate.	— @ —	1 00 @ 1 25
GREEN PEAS, Carolina ₱ crate	— @ —	2 00 @ 3 00
RHUBARB—₱ doz.....	— @ —	1 00 @ 1 50
RADISHES—₱ 100.....	— @ —	1 50 @ 3 00
SPINACH—₱ bbl.....	— @ —	1 75 @ 2 50

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 13th, 1873, and for the corresponding month last year.

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th.	312,000	619,000	496,000	500	101,000	685,000
25 d's *last* m'th.	191,000	267,000	381,000	2,750	59,000	643,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th.	286,000	1,678,000	2,274,000	71,000	147,000	1,512,000
25 d's *last* m'th.	325,000	687,000	1,305,000	4,500	187,000	1,115,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1873..	312,000	619,000	496,000	500	101,000	685,000
24 days 1872...	181,000	211,000	1,347,000	——	127,000	604,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's 1873....	286,000	1,678,000	2,274,000	71,000	147,000	1,512,000
24 d's 1872....	294,000	1,795,000	3,336,000	136,000	249,000	1,464,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
May 5, 1873.	218,223	535,233	27,360	46,764	276,666	181,496
Apr. 7, 1873.	483,904	866,207	55,819	83,680	666,598	178,292
Mar. 10, 1873.	671,197	2,515,892	37,302	293,493	846,596	166,362
Feb. 10, 1873.	805,561	3,189,195	39,580	468,934	959,134	173,100
Jan. 13, 1873.	1,177,359	4,743,961	44,089	571,051	1,367,187	175,805
Dec. 9, 1872.	1,305,975	5,675,730	51,665	624,854	1,608,865	215,326
May 8, 1872.	1,015,553	197,303	271,565	18,032	1,115,022	80,447
April 8, 1872.	1,881,946	424,856	355,430	190,691	78,387	——

4. *Exports from New York, Jan. 1 to May 9:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1873..	392,997	1,485,326	2,965,331	49,700	11,330	10,564	24,152
1872.....		286,731	2,380,246	4,425,213	208,300	9,360	12,988
1871.....		639,952	3,499,708	1,000,576	17,338	67,903	13,777
1870.....		633,515	4,003,651	119,022	6,709	——	1,089
1869.....		337,389	2,643,860	1,173,235	——	——	39,583
1868.....		319,202	1,708,175	2,909,014	153,093	——	36,469

New York Live-Stock Markets.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
April 14th.....	7,345	95	1,780	14,451	41,481	66,934
April 21st.....	9,245	145	2,945	20,303	41,825	74,460
April 28th.....	9,440	80	3,679	20,209	41,254	74,582
May 5th.....	9,480	102	3,318	10,089	41,776	64,765
May 12th.....	9,244	48	3,770	16,258	44,866	74,186
Total for 5 Weeks....	44,654	470	15,492	81,310	211,202	——
do. *for prev. 4 Weeks*.	28,708	517	4,769	60,459	143,674	238,177

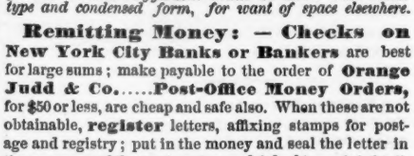
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week.....	8,931	94	3,098	16,262	42,240
do. do. *last Month*....	7,177	154	1,192	15,115	35,918
do. do. *prev's Month*....	7,199	99	684	19,090	33,268

There has been a larger supply during the past than the previous month, but the demand has been greater and prices have been well sustained; the average being ¼c. per lb. off during the last 2 weeks with a much larger run. The quality has been generally fair to good, with fewer Texans, which were mostly of better flesh.

The prices of the past 4 weeks were:

	Range.	*Large Sales.*	*Aver.*
April 14.....	10 @14 c.	11½@13 c.	12 c.
April 21.....	10 @14½c.	11½@12¾c.	12 c.
April 28.....	10½@13 c.	11¾@12½c.	12 c.
May 5.....	9 @13½c.	11¾@12¾c.	11¾c.
May 12.....	9 @14 c.	11¾@12¾c.	11¾c.

Milch Cows.—There has been a good demand for choice milkers during the month at $5 @ $10 above our quotation to private parties. The bulk of cows sent in were ordinary to good. Prices are $25 @ $40 for ordinary, $50 @ $65 for fair to good, and $70 @ $80 for choice.....**Calves.**—The prices for both live and dressed veals, have been lower during the past than the previous month. Quotations for live, 7c. @ 10c. ₱ lb; dressed, 4c. @ 9c. for poor to good, and 9c. @ 12c. good to choice..... .....**Sheep.**—The receipts of sheep are larger. Prices have been quite uniform. Ten car-loads of Texas sheep were received during the past month; they average 75 lbs each, and sold at 4½c. per lb. Quotations are 7c. @ 8¼c. for unshorn, and 6½c. @ 6¾c. for clipped..... ..**Swine.**—The receipts of hogs have been greater, but prices have been firm and steady at 6c. @ 6½c. for live, and city-slaughtered 7¾c. @ 8c. for heavy to light weights.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd & Co.**.....**Post-Office Money Orders,** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Postage: On *American Agriculturist*, 3 cents a quarter, in advance; on *Hearth and Home*, 5 cents per quarter. Double rates if not paid in advance at the office where the papers are received. For subscribers in British America, the postage must be sent to this office for prepayment here. Also 20 cents for delivery of *Hearth and Home* in New York City.

Bound Copies of Volume Thirty-one are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last sixteen volumes (16 to 31) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our

regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

Clubs can at any time be increased by remitting for each addition the price paid by the original members; or a small club may be increased to a larger one; thus: a person having sent 10 subscribers and $12, may afterward send 10 more subscribers with only $8; making a club of 20 at $1 each; and so of the other club rates.

WILL YOU HAVE ONE OF THE VALUABLE PREMIUMS?

1 MONTH MORE.

☞ **Read over the list of Excellent Premium articles on page 238. Select one or more that you would like, and you can soon obtain subscriptions enough to secure the Premiums.**

One Month Yet Remains—June—during which *any* person who wishes to obtain one or more of the useful and valuable articles offered in our Premium List (of which a copy will be sent free to any applicant, see page 238) can easily get them. This has already been done by more than 14,000 persons, who during years past have tried with success the raising of Clubs of Subscribers for our papers, and availed themselves of the liberal offers of Premiums made by the Publishers.

We invite **all** our Subscribers to take hold of this work and secure a Premium while the offer is open. Specimen copies of both papers will be sent to any wishing to show them for this purpose.

Fifteenth Session of the American Pomological Society.

We learn from Col. Marshall P. Wilder, the President of the Society, that the next meeting will be held at Boston on Wednesday, September 10th, and continue for three days. It is very desirable that there should be a full attendance, not only because this will be the Quarter-Centennial Gathering, but for the reason that several important matters will come before the meeting. Liberal premiums will be given upon the fruit exhibited, and various excursions are proposed, and there is every prospect of a pleasant and successful session. Farther particulars will be given later.

Condition Powder.—"Lankford." Probably the most trustworthy condition-powder is Taylor's medicated cattle-food.

Bruised Shoulder.—"Lankford." The inflammation and swelling on a horse's shoulder caused by uneven bearing of the collar may probably be reduced by cold water dressings. If the swelling suppurates and breaks, the wound should be washed with warm water, and a little compound tincture of benzoin be injected into it, after which it will rapidly heal if protected from the air by simple ointment and a covering of cotton cloth. Of course, no collar can be worn until the wound is healed, but if a breast-strap does not interfere with it the horse may do moderate work.

Time to Break a Colt.—"S. F. S.," Neoga, Ill. A young colt should be trained from the time he is a few months old. By two years of age he should be used to the harness or the saddle but not be driven or ridden. Then in his third year he may be mounted or driven without any breaking, and will come naturally and gradually to work. But the training should be constant, regular, and of the gentlest character. He should never be frightened or teased or ill-used.

Navy Beans.—"S. F. S.," Neoga, Ill. The soil best adapted for beans is a light, loamy one, not too rich, but clean and free from weeds. They should be planted in hills 24 inches apart or in drills 27 or 30 inches apart, and 18 inches apart in the drill; five or six beans may be dropped in a hill. The crop needs sufficient cultivation to keep the ground clean, but they should not be hoed or cultivated while wet with rain. They are harvested by pulling the plants when the beans are ripe, and stacking them up around a pole five feet long, laying the bunches of beans across each other, the roots being kept on one side of the pole. Do not expose to rain, which injures the color of the beans. Thrash with the flail, or with the machine with the concave raised.

Subsoiling and Deep Plowing.—(Young Farmer.) These terms are not synonymous. Deep plowing is turning over a deep furrow and thus bringing the subsoil to the surface. Subsoiling is breaking and stirring the subsoil without bringing it to the surface. The usual plan until within a few years was to plow an ordinary furrow with one team; and then to follow with another team and subsoil-plow. The latter had no mold-board. It simply ran in the furrow left by the first plow, and broke up the subsoil. We have seen plowing of this kind done in England with three horses on the first plow, and six horses on the second or subsoil-plow. As a rule it was too costly to be profitable. In this country we rarely put more than two or three horses on to either the first or second plow. And within a few years several contrivances have been patented and more or less used whereby the subsoiling and plowing are done with the same plow and at one operation.

Rheumatism in Horses.—"S. K. R.," Adams Co., Wis. A common remedy for acute rheumatism in horses is to give 25 drops of tincture of aconite root every four hours until six doses have been given. The horse should be placed in a clean stable with plenty of bedding under him, and the legs and body should be covered with blankets kept wet with cold water (in summer.) Often rheumatism accompanies epizootic catarrh in which cases it disappears with the catarrh.

New England Poultry Club.—At the annual meeting of this association held at Worcester, Mass., on April 11th, it was decided to hold the next annual exhibition at Worcester on January 20-22, 1874. A. D. Warren was elected President, Philander Williams, First Vice-President, and G. H. Estabrook, Worcester, Mass., Secretary.

Mulching Fruit-Trees.—"J. A. McC." asks: "What is the best way to make fruit-trees live and grow the first year? Would you mulch or hoe?"—We would do both. Plant in well-prepared soil. It can not be made too fine and mellow. Spread out the roots carefully, cover with fine, rich earth. Press the earth as firm as possible round the roots. Then cultivate and hoe to keep down weeds. Keep doing this until dry weather sets in, and then mulch with manure, straw, or anything that will check evaporation and stop the growth of weeds. The mulch should extend for at least three feet on all sides of the tree.

Raising Potatoes without Hoeing.—"J. A. McC.," of Niagara Co., N. Y., favors us with his plan of planting and cultivating potatoes. He cuts peachblow potatoes two eyes in a piece. Marks out the land with small plow 3 or 4 inches wide, and furrows 3 feet apart. Then crosses the furrows with a common corn-marker with teeth 2 feet apart. Drops one piece in a hill. Covers with a large plow. Just before the potatoes are up harrows thoroughly crosswise of covering furrow. In a dry season, when the plants are one or two inches high, he throws a light furrow on the row. This acts as a mulch, and the potatoes grow rapidly for a few days. Then if the drag does not hurt the vines, harrow again. If it does, cultivate across the back furrows. This loosens the soil and works it down level. After a few days shovel-plow one way and cross with cultivator, which levels the earth down again. Finally, hill them up with shovel-plow, working thoroughly early and late.

Value of Roots.—"H. H. M.," Camden, Me. On the whole, stockfeeders agree that the best roots for stock are mangels. They yield a far heavier crop than any other, and their feeding value is equally as good, if not better. The yellow globe is preferred generally, although the long red yields a heavy crop. Potatoes contain more nutriment weight for weight than mangels.

SUNDRY HUMBUGS.—In this season of backward crops the usually bountiful crop of humbugs seems to have been retarded. We look at this time for a new set, just as we look for spring styles in bonnets and hats. Our agricultural readers are no doubt too busy with spring work to send us the usual swarm of letters and circulars, but we do not flatter ourselves that the supply has given out. Here we have a lot of

LOTTERY SWINDLES OR GIFT ENTERPRISES

for various objects that are, in themselves, worthy enough. It is a great pity that every State will not do as Ohio has done, and put a stopper upon Lotteries, Distributions, Gift Concerts, and every form of this kind of gambling by abundant penalties in the way of fines and imprisonment for all concerned. If any of our readers wish to invest in the Gift Enterprise for the Library of Leavenworth, Kansas, the Omaha Orphan Asylum, the Milwaukee Light Artillery Gift Enterprise, or any other chance game of that sort, let them refer to our Humbug article for April, and see what people right on the spot say as to what proportion of the money paid in goes to the ostensible object of the scheme. The management of the Louisville Lottery, as there exposed by Louisville papers, is a bad enough showing, but it is probably better than can be made by the majority of such schemes.

MORE ABOUT PROCURING NAMES.

We have already shown how the various swindlers procure the names of parties to which they can send their (often infamous) circulars. A gentleman in Wisconsin sends us a new circular, with a letter expressing his indignation that such a thing should have been sent to his daughters—the good man not knowing that no home can be an Eden so sacred that these slimy serpents will not crawl into them. At the risk of giving the Charleston Medical Infirmary a first-rate advertisement, we will give the circular in full, remarking that the matter quoted is at the head of a ruled sheet, properly laid off for the convenient insertion of name, post-office, county, and state:

"OFFICE CHARLESTON MEDICAL INFIRMARY,
"CHARLESTON, ILL., May, 1873.

"*Dear Sir or Madam:*

"Thanking you for past kindness, we again solicit a small favor at your hands, for which we propose to recompense you. If you will fill out this blank to the number of 50 names and post-office address—first of all with the afflicted of *every* form, whether cripples, deformed, or chronic diseases, such as Consumption, Female Diseases, Catarrh, Deafness, Sore Eyes, etc., etc., in your vicinity and county; if not a sufficient number of these, add the names of your best farmers to make the number up to 50 (in all cases give afflicted first). If you do not always know the address of those afflicted, give the names and address of some of their friends, so we may reach them through this channel. On receipt of the list returned, we will send you (postage prepaid) by mail a fine colored engraving, 13x18 inches in size, of the late Washington Irving's home, 'Sunnyside, on the Hudson,' a beautiful picture, handsome enough to adorn the walls of cottage or palace. These names are intended as a channel through which to distribute our *Health Journal*, free. In doing this you are not only doing us a service, but a deed of philanthropy, as he that directs the sufferer to relief is a philanthropist.

"Trusting that we shall receive a speedy response,
"We are, very truly yours,
"DR. S. VAN METER & CO.

"P. S.—On receipt of 10 cents our 'Lecture on Marriage and Guide for the Young' will be sent, postage prepaid; a magazine of 48 pages, illustrated.

"Continue list of names on opposite page in same order as on this, and be sure and sign your own Name, Post-office, County, and State separate and apart from the rest, so we may know where to send the Engraving."

In every village or country place there is likely to be some one thoughtless enough to, for the sake of the proffered reward, fill up such a list with the names of the neighbors. If one of these "infirmaries" can get the name of a person afflicted in any manner, whether a hopeless cripple or one with an in-growing toe-nail, they will "go for him." But Van Meter and Co. did not catch our friend, N. B., of Beloit.

MEDICAL HUMBUGS

are unusually dull this month. One subscriber writes that he tried the "Ear-Vibrator" advertised in New York, and that it proved utterly useless. We suppose our friend to be a farmer, as he dates from a farming community. If one of "J. F.'s" men should come in and report that the reaper was out of order and would not work, would he look over the advertisements and order some hardware? This would be about as sensible as to order an "Ear-Vibrator" without knowing what is the matter with the ear. Would he not first examine the reaper and find out what was the matter, and then arrange for his repairs accordingly? The ear is one of the most delicate organs of our bodies, and of more value than many reapers; yet it is treated as if it were so much old iron, rather than, as it is, one of the most exquisitely-fashioned channels with which we communicate with the outer world. Why will people be sensible, and even economical, with regard to everything except their

own precious bodies, the very "Temple"?.. . .Have not we given our opinion of advertising doctors often enough to be spared inquiries about this or that one? Let those who have written these inquiries look in the "Humbug" column anytime these many years for their answer.... The same will apply to all "Universities," "Medical and Electrical Institutes," "Wonderful Medical Discoveries," "Indian Blood Syrups," and the like. .... Here is a good soul who sends us a pamphlet called the "Good Samaritan," with several passages marked, and asks what we think of them. His marking the passages shows that he thought they were inexpressibly vile, and he had little need to appeal to us..... Wonderful indeed must be the "Parisian Flesh-Producer," upon which patients have grown fleshy without taking a particle of food It is singular that this "Flesh Producer," which was discovered at a conference of the "leading physicians of France," and "has been ordered by the Government to be used in hospitals," should first be made known to us through a small circular.

BURNING FLUIDS.

It is again necessary to caution all as they value their lives to have nothing to do with those oils of which benzine, gasoline, or similar liquids form a part. It is pretended that by the addition of various substances the explosive quality is removed. This is false, and no matter how much salt, potatoes, and other stuff be directed by the recipes, the liquid remains dangerous.....Particularly unsafe are those affairs in which the liquid is converted into a vapor in the lamp, and then burned after the manner of gas. The Vesta Gas-burner is of this kind, and seems to be industriously pushed. Our advice is to let all such things alone and, if need be, burn tallow dips rather than run the risk of them.....It is

SO EASY TO GET RICH,

that we wonder that any one remains poor. If we believe the circulars that we have before us, one is sure of a handsome income. L. C. Kennedy & Co. show plainly how a post-master can get $3,000 a year without investing anything, by acting as agent for the "Seven Seals, or Golden Wonder." Young ladies can make $50 a week by selling recipes to make "Crystal Honey;" or a yearly income $1,061.50—there is nothing like being exact—by selling certain subscription-books, and so on.. ...The recipes that are sold are usually either old and well-known ones, or are thoroughly worthless. Here is one that will serve as a sample of those sold *verbatim et literatim:*

"A receipt to prevent mice, insects, bugs, or worms touching either fruit trees, current bushes, tobacco plants, or garden stuffs. Also for keeping either flies, fice or flees out of houses and from stock.—One quart of turpentine; one peck of lime; one peck of ashes; one peck of walnut leaves; six onions; one quart of tar. Directions.—Mix the above well together in one barrel of water, using the tar only to put around the trees to keep the worms from crawling up into the branches in the spring, and omitting the tar, lime, and ashes. When used for the house and stock, use the above as a wash, or to sprinkle over the above-named. And we warrant the same to work effectualy at all times and in all cases."

If any one can find out what to do from these directions, we hope he will do it.....We have letters asking about a Shirt-Pattern Company in New York. We know nothing about this particular case, but it is always safe to avoid dealing with any person who does not give his place of business, but *only* the number of a box at the post-office.

Galvanized Iron Pipe.—We learn that the American Submerged Pump Co. have abandoned the use of galvanized iron pipe, and substituted those covered with *enamel*, which they claim perfectly protects the contact of the water and iron.

Book Wanted.—"R. H.," Reading, Pa. There is no one book that we know of from which you can get all the information necessary to carry on a farm. "Waring's Draining for Profit," etc., is a useful book on that subject, and "Allen's New American Farm Book" is probably as good a one as there is on general farming.

Agricultural College Funds.—In one State after another we find the land grant to establish Agricultural Colleges a source of trouble. Now New York has its turn, and the Legislature is asked to investigate the disposition made of these lands by Mr. Cornell. It is a new thing to find the name of Mr. Cornell associated with dishonesty, and he repudiates the charges *in toto*, and asks for an investigation. It would be more pertinent if Congress should inquire how this grant came into the hands of Mr. Cornell at all; for whatever else Cornell University may be, it is not an Agricultural College. What a muddle, with a few exceptions, this whole Agricultural College business has been from the beginning; and we have abundant cause of congratulation that the additional grant lobbied for last year so thoroughly failed.

Trial Trip.—We invite all parties not acquainted with our valuable paper to try it for six months, from July to December. Subscriptions will be received for that time at seventy-five cents each. Almost daily we hear the remark that some item in the *American Agriculturist* is worth far more than a year's subscription ($1.50.) Please understand, we will send it for six months beginning July '73, for 75c. Of course this does not include the beautiful chromo "Mischief Brewing," which is offered to all *yearly* subscribers free when taken at 245 Broadway, twenty-five cents extra when sent prepaid. Try it six months or a year.

Jersey Herd Register.—The Second Vol. of the Herd Register of the American Jersey Cattle Club is out, and is in form and general style much like its elegant predecessor. This volume contains Bulls, 540 to 917, and Cows 1,423 to 2,447. Besides these there is a list of owners, changes of ownership, and list of members. There are twelve fine photographic portraits of celebrated animals, and the whole is in keeping with the character of the choice animals to which the work is devoted. To be had of the Secretary and Treasurer of the Club, Col. Geo. E. Waring, Jr., Newport, R. I. Price $5.

Trusses and Rupture.—As trusses are mere mechanical appliances for a mechanical derangement of the body, we advertise them, as they do not come under the rule that excludes medical nostrums. The number of inventions for trusses almost equals those of washing machines and cooking stoves. The tendency of inventors of trusses is properly towards simplicity. Those who recollect the formidable combinations of springs, buckles, and pads formerly offered as trusses, will be surprised at the simplicity of the new Elastic Truss. This appliance is so light, and the pressure is so equal and gentle, that it may be worn night and day without inconvenience, while it is sufficiently firm to hold the rupture during the most violent exercise. Where practicable, it is advisable to have a truss fitted by a skilled person, and those who live in and near the city can find such at the elegant rooms of the Elastic Truss Co., 683 Broadway, near Amity street. The truss is cheap, and being so light that it can be sent by mail, it is brought within the reach of all who need one.

A Good Thing in a Good Place.—Mr. R. C. Browning, President of the Metropolitan Washing Machine Co., who has been a very large advertiser, informs us that for some time past he has advertised only in this paper. He finds it to be his best paying medium. Other parties who have as good articles as the Universal Wringer and Doty Washer, which are made by the above-named company, will find the *American Agriculturist* unequaled for bringing good, paying customers.

Flax Seed for Mares.—"Lankford." A small quantity of flax-seed meal occasionally will do no injury, but rather good to a mare in foal. One or two pounds in the feed thrice a week would have a laxative and cooling effect.

Manuring Salt Meadows.—"F. G.," Mapes Landing, N. J. It is doubtful if any manurial application would improve the product of a salt meadow, unless it could be drained and freed from the overflow. In that case lime would be the best application in comparatively large quantities, say 75 to 100 bushels per acre. Marl would be the next best application.

A Screw Stump-Puller.—"D. T. D.," Seattle, Washington Territory. A stump-puller that rests upon framed timbers as the one referred to, may be used without trouble on uneven land by blocking up beneath the sills. For this purpose a few spare wooden blocks should accompany the machine.

Hay or Corn.—"L. M. C.," Northfield, Ohio. Corn can not be substituted for hay altogether, and although corn may be only $15 per ton and hay $20, yet corn can not be used alone. It is too stimulating and too nutritious, and not sufficiently bulky to be fed alone. But if a ton of corn at $15 is fed with one ton of cut corn fodder at $5 a ton it will be equal to two tons of hay at $20 a ton, and in such a substitution there would be a great gain, equal to one half the cost of the hay.

Grass for Wood Land.—"R. H.," Reading, Pa. Orchard grass is the best to sow in shaded pastures or in open woodland cleared for pasture.

Crushing Bones for Poultry.—"Mrs. S. D. C." There is no hand machine for crushing bones for poultry. Bones are too hard for any hand machine. Our plan is to have a large stone in the poultry yard, and break the softer bones with a common hammer, allowing the pieces to fly where they happen to go. The fowls generally attend very closely on the operation, and pick up the fragments as fast as they fall. The larger pieces are broken again until they are fine enough. The very hard bones are burned and given to the fowls with the ashes, from which they select the fragments.

Keeping Butter in Hot Weather.—"Jas. F C.," Orange Co., N. C. There is little doubt that the soiling system will prove successful in your section where with rich soil and mild climate green crops may be secured throughout most of the year, if only a proper selection is made. Then with proper care in keeping the milk and packing the butter, there would be no reason why success could not be assured. With an ice-house and an underground dairy built somewhat on the plan of that figured in the *Agriculturist* of November, 1871, pages 417, 418, the milk and butter might be kept cool. In packing the butter care should be taken to procure new white oak firkins or pails holding 50 to 100 pounds, which should be soaked in brine before being used. The butter should be packed closely in layers of six inches or thereabout with a handful of the best dairy salt sprinkled on each layer before the next is put down. When full the butter is to be covered with a piece of muslin neatly fitted, this is covered with a layer of salt, and the firkin headed up tightly and kept in a cool place.

Turnips Every Year.—"R. E. H.," White Creek, N. Y. It is not advisable to sow turnips on the same ground every year in succession.

Red Pepper for Stretches.—"L. N. C.," St. Croix Co., Wis., writes that he gave a teaspoonfull of red pepper in water to one of his sheep which was suffering from stretches, and it soon recovered and commenced eating.—As stretches is simply the result of indigestion, anything that promotes digestion is both a preventive and a cure. Salt and sulphur regularly given to sheep is considered a remedy for this complaint.

Using Bones.—"R. E. H.," Washington Co., N. Y. The easiest method of disposing of a wagon-load of bones is to burn them in a heap with waste wood, and then pound them into dust on the barn floor with a wooden pounder. They may then be sown in the drill with turnips, for which they are very useful, or may be spread on grass land or pastures.

Cruelty to Animals.—"W. G. G.," Spencer Co., Ind., writes: "My cow was sick a few days after calving. I split her tail, put in salt and black pepper, and tied it up; poured turpentine in the hollow back of her horns, and bored a hole with a gimlet in each horn about two inches above the hair. *Did I do right?*"—Now this poor cow had recently calved, her appetite became poor, and she was continually lifting up her hind feet and setting them down in another place, showing by this action, as plainly as a dumb animal could, that she was in pain and suffered from weakness consequent on her condition. It was simply a case of frequently occurring nervous debility, and should have been met with warm blankets over the loins kept wet with warm water if the cow's extremities were cold, and warm drinks of bran or oatmeal gruel, with soft bedding, and generally kind treatment and careful nursing, instead of the above cruelties, which make one shudder to think of.

Mangels.—"S. A. H.," Cherryvale, Kan. Mangels may be sown early in June. They are sown in drills the same as rutabagas, and need exactly the same treatment. In another place will be found a description of the method followed in Canada which is a good one.

Pump for Well 25 Feet Deep.—"H. M. H.," Orange Co., N. Y. For a well 25 feet deep any common suction pump will answer. The best wooden pump is one of cucumber wood, the best metal pump is the American Submerged Pump.

How to Raise Mangels.—F. Malcolm, Innerkip, Ontario, writes as follows: I had about half an acre of mangels last year from which I took about 600 bushels, part was Long Red and part Yellow Globe. The Long Red would have yielded the largest bulk, but I think most highly of the Yellow Globe, it being more solid and not liable to break in throwing into the cellar. My plan of sowing is first to make drills about two feet apart, open the top with the end of a stick and sow *immediately*. (6 pounds per acre is the usual quantity of seed.—ED.) Then walk on the seed heel to toe, which will make quite a hollow in the center of the drill. Then with a garden-rake level the drill which will cover the seed about half an inch. Carrots I treat the same way, and have been very successful in getting a good catch. A little extra trouble in putting in the seed will perhaps give two or three hundred bushels more per acre.

Why they Burn Corn.—"A Farmer's Boy," Nebraska, tells us why they burn corn out there. He lives twenty miles from timber, and by going that distance can buy green cotton-wood for $9 a cord, paying for it with corn at fifteen cents a bushel. At this rate, counting the value of two days' hauling, one cord of wood costs 100 bushels of corn, which will burn three times as long and make a better fire than the wood. It is therefore the cheapest fuel that can be procured, to say nothing of its convenience.

Cure for Hoven.—A. Chavannes, Knoxville, East Tenn., writes that in cases of hoven in cattle he has administered, with entire success, a table-spoonful of sulphuric ether in one pint of water. If the case is a bad one, a second dose is given in fifteen minutes after the first. The cow is made to walk up and down gently until relieved.

Will it Pay to Draw Manure Seven Miles?—A correspondent has recently bought a run-down farm, seven miles from Montreal. He has been hauling manure all winter with two teams, one trip per day; men receiving $20 per month and board themselves. He "can get any amount of manure merely for the hauling. Will it pay? Also, is the manure from cow-stables as valuable as horse manure?" We think it will pay well, especially if you could find something for the teams to draw into the city. If the cows are fed on bran, brewers' grain, and clover hay, the manure is *better* than ordinary horse manure.

What to Do with the Manure.—The same gentleman asks whether he had better use his manure for hay or for potatoes, both of which, he says, bring a good price in the Montreal market.—We think it would be better *for the land* to apply it to grass. First make the land rich, and then a few years hence grow potatoes.

Flow of Water Through Pipes.—"P. T. D.," Deans Corners, N. Y. It depends altogether on the amount of pressure or the height of the spring above the discharge, what amount of water would pass through a ¾ inch pipe 1,500 feet long. If the head was 40 feet there would be a pressure of over 15 lbs. per square inch, which would be sufficient to overcome the friction and yield a good flow. But if the head was only 2 feet or less the flow would be very much diminished by friction or the adhesion of the water to the sides of the pipe, unless the diameter were increased. In the writer's experience a half-inch pipe of over 1,200 feet with a head of three feet above the outlet only yielded a few drops of water in a minute; and when half the pipe was changed for another an inch in diameter, it gave about one pint per minute; with the other half changed to 1¼ inch there was a good flow.

Potash on Sandy Soils.—"D. F. W." Such very soluble fertilizers as carbonate of potash, (common potash) and other chemical manures, have not been found of much use on light, sandy soils. They are very soon washed out of reach of the roots of plants by rains and lost. Stable manure or clover plowed under has been found of greater use in improving such soils than anything else.

Steaming Feed.—"H. A. S.," Hartford Co., Ct. It makes no difference in the process of steaming feed whether the steamer is higher or lower than the steam-chest; but the steam should always enter at the bottom of the chest. It is not easy to drive heat downward. There would be no greater consumption of fuel worth speaking of with a pipe 100 feet long properly protected than with a pipe 5 feet long. The amount of fuel needed for a Prindle Steamer to steam for 20 head for 6 months, would be about two cords of dry, hard wood, or two tons of coal, or somewhat less.

Spotted Essex Pigs.—A correspondent asks: "Are the pure, improved Essex at the present day ever parti-colored? My case is this: An Essex sow bought in Mass., of a most reputable breeder, has just had her third litter from a boar purchased of the same breeder; and there are three of the pigs spotted, buff and black and white and black. Her two previous litters from another boar were all jet black."—We have heard of such cases before. It does not necessarily follow that the pigs are not pure-bred. The truth is, however, that there is a kind of mania among pig breeders both in this country and in England for "improving" their pigs by crossing, and the probabilities are that some of the ancestors of these pigs came from such a breeder. The breeder from whom our correspondent got the pigs may have been a most careful and reliable man, but if he got some of this cross-bred stock the alloy may show itself many years afterwards. The Essex was originally a parti-colored pig, and this may be another instance of reversion. Still we should be inclined to reject the stock. At any rate, we would not breed from any that are not entirely black.

Three Questions.—Wm. Marshall, Adamstown, Md., asks, 1st. "Does the bottom of a carriage-wheel move when in motion; if so which way?" 2d. "Will two railroad trains of equal weight moving with equal velocity collide with greater force than one of equal weight and velocity running against a solid rock?" 3d. "Does the pendulum of a clock stop between its vibrations?"—Replies.—1st. The motion of any given part of the circumference of a wheel is in the form of an arc of a circle whose chord is equal to the circumference of the wheel, and whose height is equal to the wheel's diameter. The direction of the motion of any point in the circumference would be that of a succession of these arcs. 2d. The two trains would collide with double the force with which the one would strike the rock. 3d. A pendulum stops for an instant of time between each vibration. There can be no abrupt change from a forward to a backward motion without such a stoppage.

Would be a Civil Engineer.—"J. F. S.," Hanover, N. H. There is no other method of becoming one of a corps of engineers on a railroad survey than first becoming a competent engineer, and then procuring a situation from the engineer-in-chief who has charge of the survey, or through some party having influence with him. The latter is the most difficult part of the business.

What is a Ton of Manure.—"J. E. C.," Douglas, Mass. When "a ton of manure" is spoken of, 2,000 pounds is meant. "A load of manure" is supposed to mean an ordinary two horse farm wagon loaded in an ordinary manner. Generally such a load of barn-yard manure, not water-soaked, will weigh about one ton. If the manure is piled up until no more can be put on without squaring up the sides, two tons may be put on to a wagon, but few farmers haul more than a ton on to the soft soil of their fields.

Hydraulic Cement Pipe.—"J. W. R.," Buckhannon, W. Va. In the *Agriculturist* of November, 1872, will be found directions for laying cement pipe, fully illustrated with engravings.

Advice to an Immigrant.—G. Walker, Ballinasloe, Ireland. A young man intending to purchase a farm in America would do well to stay a year with a good farmer here; but as "farm stewards" are unknown in this country it would not be possible for one to act as such. Neither would it be likely that a young foreigner could secure a salary for the first year's work except as a laborer, because, instead of being of any value to an employer, he would have much to learn of our climate, soil, productions and method of agriculture, all widely different from those peculiar to Ireland.

"Orange Co. Pails."—"J. H. B.," Burlington Co., N. J. The Orange Co. butter package is a pail or tub holding 50 pounds, with a close-fitting lid, and painted, generally, blue. A very excellent butter pail is made of oak the same size and shape as the Orange Co. pail, with metal fastenings, and known as the "Westcott return pail."

Is Pea-Straw Injurious.—"A. J. S.," Eel River, Cal. There is nothing in pea-straw itself, saved in good condition, to account for a fatal attack of red water in cattle fed upon it, nor indeed, for any ill-effects on the urinary organs. But sometimes a species of rust, or a fungoid growth similar to rust, appears upon pea-straw, especially when a heavy crop has been laid and the weather is hot. Plants affected by smut, mildew, and similar diseases, are unwholesome to cattle, and it was probably something of that kind which injured them in this instance. In such cases a pound of Epsom salts should be given immediately, and copious drafts of linseed tea. The disease called red water originates almost every time from unwholesome fodder.

Burning Bones.—"S. F.," Chester Co., Pa. It will be cheaper to burn bones than to give half for grinding them. The fat contained is of no use as manure for any purpose, but the gelatine is valuable as it furnishes nitrogen. This, of course, is lost in the burning, and it amounts to about 40 per cent in dry bones.

Herd Law in Kansas.—A correspondent, who is one of the Commissioners of Crawford Co., Kansas, states that their Legislature a year ago gave County Commissioners the power to prescribe what animals should not be permitted to run at large, and providing for the recovery of damages by parties injured against the owners of trespassing stock. The Commissioners of Crawford Co. have made an order restraining all stock from running at large. The fact, therefore, that special enactments for separate counties were decided to be unconstitutional should not lead to the mistaken idea that there is no "herd law" in Kansas as stated by a former correspondent.

Late Corn.—"W. M. M.," Northampton Co., Pa. We have secured perfectly ripened corn which was planted so late as the 24th of June, but it was an early sort, viz., the early Canada, which is excellent for replanting or for planting on a newly-mown clover sod.

The Best Fertilizer for Corn.—"W. M. M.," Easton, Pa. Our observations last year proved very satisfactorily that the best fertilizer for corn is the dried flesh-and-blood manure. It acts immediately, produces a great growth, and pushes the crop rapidly forward, thus causing an early ripening.

Manure for Corn.—"J. F. W.," Center Co., Pa. Bone-dust is not sufficiently active as a manure for corn. The best manure we have used or know of for corn is blood or flesh-manure. It has a large proportion of ammonia, is very soluble, and acts immediately. If not possible to apply it with the seed a handful may be hoed in around the young plant with the best results.

Horse-Powers.—"J. G.," Bristol, Ct. There are but two kinds of horse-powers, the lever power and the tread-power. The latter is the most convenient where two horse-power is sufficient, as it occupies but very little room and may be set up on the barn floor. There is no danger to be apprehended in using a tread-power if common precautions are taken, and oxen may run them as well as horses.

Managing Manure.—"F. H. W.," Buncombe, N. C. It is a disputed question whether it is most economical to draw manure fresh from the stables and spread it on the surface where it shall remain until plowed under or it has rotted on the surface, or to work it in the barn-yard until it has rotted and become fine. The latter practice is the one generally adopted, and although it causes more work, yet there is abundance of time during the season when field work can not be done, when this may be without extra cost. If the manure is piled up and fermented and then turned over and heated once more with proper care, it becomes so fine that it may be worked into the soil with the harrow along with the seed. We do not know how manure can be more profitably used.

Corn on Muck Land.—"C. H. S.," Miami Co., Ind. Corn will not thrive on muck land without a good dressing of wood-ashes or lime. The reason of the crop turning yellow and perishing on such land is simply that vegetable matter alone will not support a crop; mineral matter is needed. If not too costly a process the addition of two or three hundred loads of clay to the acre would vastly improve muck land.

Fodder Corn.—"J. M.," Jefferson Co., Ohio. There is no better crop to raise for fodder than corn. It may be planted in rows 30 inches to 3 feet apart, at the rate of 3 or 4 bushels per acre, which will give 12 grains to the foot or thereabouts. It should be cultivated as carefully as ordinary corn, and on rich soil will yield an immense crop. Sown broadcast it will not yield so much as when in rows.

Loss of Wool.—"J. M.," Butler Co., Ohio. Loss of wool is not necessarily a sign of disease. Some sheep have a habit of shedding their wool in the spring. Such should be sheared as soon as the fleece becomes loose, and if the weather is excessively cold protect them.

Mole-Plow for Irrigation.—"S. B. W.," Greeley, Col. In a loose friable soil it is not likely that the channels made by a mole-plow would last for 24 hours. If water were turned into these channels they would collapse at once. It would not pay to go to the cost of making the experiment. In a stiff clay the channels might be more permanent, but it is inevitable that loose earth would fall in and close them very frequently. Irrigation must necessarily be from the surface.

Egg-Eating Fowls.—"G. H. W.," Hubbardtown, Mass. When fowls are confined they will eat their eggs, and no persuasion but that of the axe will prevent them. They must be freed from confinement and given their natural employment of scratching, or they will get into this mischief.

Swinging Door for Pig-Pen.—"F. H. W.," Buncombe Co., N. C. The swinging door figured in the March *Agriculturist*, is designed for each pen only and one is sufficient. It may not be necessary in North Carolina to provide such careful shelter for pigs, but it is in the North, where drifting snow is often permitted to completely fill the pen, and the pig compelled to make its bed in it.

Lime.—"H. M. L.," Somerset Co., Pa. It is a fact that the richest portions of Pennsylvania in which farming land as such is salable any day for $100 to $300 per acre has been made rich, and is kept so, by the regular use of lime. Not by lime alone by any means, but with the addition of clover, and large quantities of manure made from the direct resources of the farm. The produce sold consists of grain, meal, butter, and cheese. It is there claimed that this can not be done without the regular use of lime applied in each rotation with the grain crop with which the land is laid down to grass and clover or clover alone; and from the writer's experience this claim is abundantly supported by the results. It is the large quantity of vegetable matter added to the soil in conjunction with the lime which maintains and even adds to its original fertility. If this is the in Eastern Pennsylvania, why should it not be in the Western part or elsewhere?

Hungarian Grass or Millet.—A "New Subscriber," Saratoga Co., N. Y. A crop of Hungarian grass or millet might be taken from a sod plowed after mowing. No crop pays better for a proper preparation of the ground both in rendering it mellow and fine and in fertilizing. If hay is desired we would sow thickly, say 3 pecks or a bushel of seed per acre, and cut immediately after the blossom has turned. If sown thinly the hay is coarse. If sown for soiling, the ground must be very rich, or it will make no second growth.

Machine-Cut Clover.—"E. F.," Providence, R. I. There is no difficulty in raking clover cut by a machine. With us a steel-tooth horse-rake never "ruined it." It needs to be raked as soon as it is thoroughly wilted, and cured in the winrow or cock. The slight heating and fermentation it there undergoes rapidly drive off the water, and give a sweetness of flavor to the hay, which makes it greatly more palatable and nutritious. But unless clover is cut at a proper time, which is in early blossom, it is really ruined, beyond redemption by any process of curing.

Farming in Arkansas.—John C. Palmer, Monroe Co., Ark., writes that parts of Arkansas may be called the farmer's paradise, where with less labor larger returns can be made than anywhere else he knows of. He makes 60 bushels of corn to the acre. The past season he has made 35 bales of cotton of 475 lbs. each on 31 acres. 3 acres made 2,100 pounds of lint. Clover hay grown there is not excelled in Kentucky, nor is bluegrass, red-top, nor timothy. His experience with clover is the most satisfactory. There he gets three crops in the year. The first cutting yields a ton and a half of hay, and the other two one ton each to the acre. All the fruits but grapes succeed well. Essex and Berkshire pigs are found the best to improve the native hogs, which are very poor. He raises his own horses, mules, cows, sheep, and all their feed, and if more Northern farmers with capital could get thither the country would rapidly develop.—(Our correspondent's success with clover is well worthy of emulation by our Southern readers, with whom the growth of this crop will be found a key to open up a vastly improved condition of agriculture.—ED.)

Salt for Stock.—"R. S. W.," Trenton, N. J. Salt is absolutely necessary for all sorts of stock. It assists digestion and helps to prevent the presence of worms, but as a remedy against them when they have taken possession it is of no avail. But if not fed regularly it is of very little benefit. It is best to have a lump of rock salt where the animals can always gain access to it, otherwise a special time should be set for salting.

Interfering Horses.—"O. S.," Granby, Ct., writes about interfering horses. He says: "I have seen but few out of several hundred interfering horses that struck the opposite ankle with either the crust of the hoof, the shoe, or the heel-cork; and those were all cured by rest, good keeping, and hand-rubbing of the legs, thus showing that weakness and a loose shambling gait were the cause. When the crust of the hoof turns under on the inside and grows out on the outside, the horse will interfere. When such a shaped foot is seen, some chalk should be rubbed on the hoof, and when the horse strikes and the foot is examined, it will be found that the chalk has been rubbed off near the toe, and if the clinches of the nails are loose, they will be found to have torn the skin of the opposite ankle. In such a case the hoof should be pared away on the outside as much as is safe, and the shoe set out on the inside so that the bearing of the foot will be equal on each side from the center as it rests upon the ground. The horse will not then interfere. A farrier who had a reputation for shoeing interfering horses so as to cure them, tried this plan on a horse, and found that the chalk mark was rubbed off on the outside of the toe, and that two projecting clinches there had cut the opposite ankle. He pared the outside of the hoof and set on a shoe made very thin on the outside and very thick on the inside, and set well out on the inside with the heel wide. The interfering then ceased. This is not the only trouble that can be remedied by skillful shoeing."

A Double Carolina Jessamine.—The ordinary wild Carolina Jessamine (*Gelsemium*) was figured last month. Since then we have received from Mr. P. J. Berckmans, Augusta, Ga., the flowers of a double variety. This novelty which, if we mistake not, originated in Louisiana will be prized in Southern gardens and Northern conservatories.

Luminous Minerals.—Querist asks: "Is there a mineral substance which omits sufficient light in the dark to enable a person to read letters or figures?"—There is no mineral that gives off light of itself in this way, but fluor spar and some other minerals after being exposed to sun-light are "phosphorescent" when taken into a dark room, and continue for a while to give off some of the light they have absorbed.

Hollow Horn.—"A Learner," Chatauqua Co., N. Y., says, "How am I to believe that there is no such disease as "hollow horn" or "horn ail," when I find the horns seriously affected, sometimes very hot and feverish and sometimes deathly cold? Are not these symptoms proof of disease there? And yet you say there is none."—Learner has well designated himself; for it is necessary for him to learn that when he himself has a severe headache and a burning heat in his temples, and throbbing veins, that it is not his head but his stomach that is out of order. In such a case, he would linger a while before he poured pepper and turpentine into his ears. Both men and oxen are flesh and blood.

Insects from Georgia.—"J. T. S.," Snow Hill. The cases found on the rose and quince are the nests of the Basket-worm (*Thyridopterix.*) The perfect insect is a moth. The larva lives in these cases and moves about with them. The female never emerges from her case but undergoes her transformations, lays her eggs and dies there; the coffin of the mother serving as a cradle for her children. When sufficiently numerous, they do much mischief, and should be destroyed.

Green Manure for Garden.—"A. B." Galt, Ontario, finding stable manure expensive, proposes to sow peas or rape and turn under. This would certainly enrich the soil and would answer among trees, but practically it would be difficult among currant-bushes, where he proposes to use it. The crop would be apt to smother the bushes. Better make a compost of muck and lime and spade it in around them.

Mange.—At this season of the year dogs, horses, and cattle, are subject to a parasite in the skin which causes severe itching and loss of hair. It is the well known complaint mange, which is similar to the formerly well-known itch. A cure is to rub the affected parts with an ointment made of 1 pint of fish-oil, 6 ounces of flowers of sulphur, and 6 ounces of spirits of turpentine. As it is contagious, or communicated by touch or contact in any way, the stable fittings, walls, and door frames, should be washed with lime-wash in which carbolic acid has been dissolved, at the rate of 4 ounces to the pailful.

Diseases of Poultry.—As a reply to many inquiries respecting diseases of poultry, we say generally that the remedy lies altogether in prevention; that preventive measures against cold, damp, filth, overcrowding, want of ventilation, irregularity of feeding, and watering, in every case ward off almost every complaint that poultry are subject to. Other curative measures are generally inapplicable, and if those we mention are resorted to disease will be prevented or its progress stopped when it has occurred.

Striped Bugs.—The following comes from "S. F.," a correspondent of Delaware County, O. "Take four pieces of board, each one foot long and seven inches wide, nail them together, and this will make a box without top or bottom. Before your plants are up put this on the hill, press it down so that bugs will not creep under, and the work is done. When you want to hoe them take off the box; this done replace as before. I have proved it for several years, and never had one enter the premises. Several that I know have tried it never failed of a sure defence. When the plants are so large as to be out of the way of the bugs take off the box and put it under shelter, and it will last forty years or more. Try it, it don't cost much."

Sheep for the Plains.—"C. H. S.," Republic Co., Kansas. Pure Merino sheep are not exactly the proper sort wherewith to experiment in sheep-raising on the Western plains. They are too costly, and pure Merino wool is not the most profitable. The wool manufacturers need mostly the three-quarter fleece, which is produced by sheep of two crosses of pure rams on native ewes. For a person who is commencing sheep culture, it would be best to procure not more than 100 well-selected, healthy native ewes of two or three years old, and three two-year-old pure Merino rams. The ram lambs produced should be raised as wethers, and only the pure rams used; after the second year, the produce would be three-quarter blood, and would yield fine fleeces of more than double the weight and twice the value per pound of the original natives. As the flock increases, so will the experience necessary to succeed, and the number may be increased indefinitely.

Manure for Beans.—"M. O. R.," Sackett's Harbor, N. Y. As a general thing, beans do not require much manure. Stimulating manures produce a rank growth of vine, but few pods. A dressing of a few bushels of wood ashes, one bushel of ground plaster, and a bushel of salt would meet all the requirements of a crop of beans, and with us have always produced a fair crop on well worn but cleanly cultivated soil.

A Seasonable Suggestion.—"L. L. S.," Tipton, Iowa, says that the reason why the lambs die as Mrs. W. S. has complained, is that their teeth have not appeared through the gums, and that the gums being very tender and sore in consequence the lambs refuse to suck. As a remedy he cuts the gums with a sharp penknife or lancet, so as to allow the teeth to come through.

Spaying Sows.—"H. M. C." It would be unsafe to attempt to spay a sow from any written directions. After a person has seen the operation performed a few times he can operate on a slaughtered animal several times until he becomes proficient. Any mistake made on a living animal would be fatal, as the ovaries to be extracted are in close proximity to vital parts, which are to be carefully avoided.

A Mile and a Kilometer.—"E. L. N.," St. Louis, Mo. An English mile is 1,760 yards or 5,280 feet; a kilometer is 1,000 meters: a meter is a French measure equal to $39^{37}/_{100}$ inches or $3^{28}/_{100}$ feet. A kilometer is therefore 3,280 feet or 1,093 yards nearly, or exactly 4 furlongs 38 rods 12 feet and 3 inches.

Moss on Apple-Trees.—"S. K. B.," East Milton, Mass. The best application to remove moss from trees in an orchard is a solution of potash, or concentrated potash lye (which can be procured at any store) or strong soft-soap. If neither of these can be procured easily, lime-water, the clear water which remains after the lime of the whitewash has settled, is the next best. Young trees should never be whitewashed. The application must be renewed each spring.

Windmills.—The numerous inquirers about windmills for grinding grain and other mechanical purposes are referred to our advertising columns, where they may gather the information they desire.

Small Packages for Butter.—"M. R. H.," Ironia, N. J. There is a very useful package for butter in which small quantities of one to five pounds can be put up. It is patented; we can not give you the maker's address. When he is desirous of selling them he will probably make the fact known in the usual way.

Root-Culture.—It is constantly said that roots can not be grown in this country. A striking argument to the contrary comes to us in the shape of a solid and handsome Russia turnip from J. B. Page & Son, of this city, which was grown at Vineland, N. J., which measures 24 inches in circumference. Now if such roots can be grown in one place, they can be in another where the soil and season are similar. The soil of that part of New Jersey is well known to be a light sandy loam; and if roots can be produced there, there is nothing to hinder their growth elsewhere. Root-culture is one of the most important means of improving our agriculture, and the common cry of "they will not grow here" is clearly shown, by the success of those who do grow roots, to be an imaginary bugbear and nothing more.

The Pure Brahma Fowl.—"R. K. P.," Detroit. A pure Brahma cock is not up to the standard unless he has a pea-comb. Some single combs will be found occasionally amongst pure-bred fowls; but they should be weeded out if uniformity is desired.

Wild Garlic.—"D. H.," Bedford, Pa. Wild garlic can only be killed by clean cultivation. Meadows infested with it should be plowed up and put under hoed crops, and grain-fields should be summer-fallowed before they are sown down to grass again. With care, this pest may be extirpated.

Plowing Under Clover.—"F. F.," Clarion Co., Pa. Red clover should be turned under when in blossom, as then it is in the best condition for rapid decomposition. If ripe, the stalks are woody, and remain some time in the soil before they decay.

Veterinary Books.—"W. M.," Yorkville. Stonehenge on the "Horse in the Stable and the Field," English edition, price $3.50, is one of the best of this class of books.

Garget.—"H. E. L.," East St. Johnsbury, Vt. A cow that has had the garget three years in succession may be expected to have it after every calving. She should be fattened and butchered.

Cheese-Factory in Iowa.—"A. W.," Saratoga Springs, N. Y. A cheese-factory costing $5,000 would not pay to work unless there were more than 200 or even 400 cows. As a rule, small factories do not pay. There is no reason why a factory in Northern Iowa should not be as profitable as one in the State of New York, if all other things were equal.

Bad Taste in Well-Water.—"S. J.," Bowmanville, Ontario. Generally, the first effect of a wooden pump put into a well is to give an unpleasant taste and smell to the water. This may often be remedied immediately by suspending a bushel of fresh charcoal tied up in a clean cotton cloth in the well; but it will pass away in time of its own accord. It is the result of the decomposition of the soluble matter of the wood.

Why do the Apple-trees Suffer?—"W. G. G." says that the ends of the twigs of his apple-trees died last summer from some unexplained reason. The wine-saps suffered the most. Why was it?—We can not tell without seeing some of the twigs. It may be the work of an insect which bores the center of the twig. If it happens again, send us a few of the twigs in a letter that the cause may be ascertained.

Do Mules Breed?—"W. G. G." No. They are hybrids or crosses between two distinct races, and hybrids do not breed, although exceptions to the general rule have been reported.

Chicken Troubles.—"W. G. G." We repeat what was said last month, that nearly all the troubles experienced by fowls result from cold, filth, poor feed, scarcity of water, and want of care generally. Lice affect only those fowls that are thus neglected; and when fowls turn white "around the gills," droop, and die, it is certain that there are some of the above-mentioned causes at work. Remove the cause, and the effect will immediately cease. A good tonic for fowls is a small piece of copperas in their drinking water, and pills of ginger or pepper, or both, made up with bread-crumb and a little soap.

Relative to Kansas.—"K. S. N.," Wakefield, Mass., inquires, "How many acres of land and how many head of cattle would be necessary to raise hay enough to clear $2,000 a year on good Kansas land? Also, how much capital would be necessary to purchase such land?"—That depends much on the man. We have seen land in Kansas that raised four tons of tame hay per acre, and similar land could be purchased in a wild state in that section, Eastern Kansas, for $15 to $20 per acre. The difference between the prices of prairie and tame hay in Kansas is not much, prairie selling at from $4 to $7 per ton. With these figures, one can make his own calculations.

Pulling Stumps with Pulleys.—"J. Y.," Springfield, Ont. In the *Agriculturist* of May, 1872, page 176, there will be found an engraving showing how to pull stumps by means of pulleys.

Botts.—"E. P. C.," Mills Co., Iowa. Whether botts kill horses, or whether the horses die of something else and the botts are unjustly blamed for it or not, may be a question for investigation, but it is certain that if the botts are excessively numerous in the stomach the irritation is sufficient to cause death. But all risk of this may be prevented, together with much trouble to the horse from these pests, by covering the horse's neck, shoulders, and chest with a thin cotton covering, and carefully at noon or night scraping off all the botts' eggs which are deposited on the horse's legs or knees with a sharp knife, or by washing them off with warm water. Prevention is better and safer than the very best cure.

Sugar from Sorghum.—E. P. Cook, White Cloud, Iowa. Sugar has been made from sorghum, but it is not crystalline. It is in a sticky or pasty condition, and although a process is said to have been discovered by which ordinary crystalline sugar is produced from sorghum, yet we do not hear anything of its operation. The inference is that it is not profitable.

Making Butter by Power.—"M. H.," Toledo, Ohio, sends us a slip cut from a paper which describes a method of working butter by power as follows—viz.: "In place of the inefficient hand working of the butter, jaws worked by power, squeezing out the buttermilk, just as the melted slag is squeezed out of the softened iron puddling." We have no doubt that a process something like this might be used in large dairies and by intelligent dairymen, but we never heard of any such in practice, and the paragraph is merely a piece of clap-trap. There is no similarity between the processes. Iron needs a great deal of squeezing and working to render it fibrous and tough, while butter is easily spoiled by overworking. The writer who wrote the paragraph probably knows very little about either process.

Disposing of Patents.—"G. W. N.," Hubbard, Ohio. The safest way for any party who has a patent to dispose of would be to do no business unless with known parties. There are sharpers always on the look-out for those who receive patents, and sometimes they get a deed of a patent without giving any consideration. It is better to see the parties you deal with.

Churning the New Milk.—"M. H.," Toledo, Ohio. The plan of churning the whole milk is very rarely followed. It is really more laborious, unless horse or steam power is used, than setting the milk for cream and churning the cream. The butter is of a whiter color, owing to its containing many small particles of caseine from which it can not be freed, and for this reason it does not keep well, and soon acquires a cheesy flavor and smell. We tried the plan many years ago, and do not approve of it—at least, for ourselves.

Green Manuring.—"S. K. R.," Adams Co., Wis. It is doubtful if land can be kept fertile by plowing in clover without applying other manure. Clover is not a universal panacea for all the troubles of the farmer, nor does it furnish a universal pabulum for all crops. In some cases clover refuses to grow, as on clover-sick lands, which are restored by a dressing of lime and a suspension of the crop for a few years. Yet there is but little danger of that occurring at present; the difficulty is the other way, and few farmers in America ever saw a clover-sick field. Plowing under clover is *one* of the methods of manuring only, and is not able to supplant other methods in common use, but should be used along with them.

Buckwheat Bran.—"J. S. McV.," Walhanding, O. Buckwheat bran is excellent feed for sheep, and if sifted from the hulls make a good feed for horses given on cut hay in winter. It is excellent for young cattle and cows, but is too heating for hogs. Hogs when fed on it become scurfy and scabby. Its market value is generally half that of corn-meal, but it is hardly worth so much in comparison to use.

Steaming Fodder.—"L. L.," Detroit, Mich. In the *American Agriculturist* of January, 1873, will be found an article, with illustrations, on cooking food for stock. The number will be sent for fifteen cents.

Everlasting Fence-Post.—"L. A. N.," Hartford Co., Ct. The statement now widely published that a coating of linseed oil and pulverized charcoal applied to fence-posts will render them imperishable is calculated to mislead. As soon as the oil is absorbed by the wood, the powdered charcoal is left on the surface, where it has little or no effect at all. If the fence-post is green, it will rot very rapidly. If the fence-post is well-seasoned, and the surface of the part buried in the ground is charred slightly, it will last much longer than one not so treated. If the upper part of the post is peeled, and painted with crude petroleum or linseed oil it will be rendered more durable.

Encouragement.—"J. H. E.," has tried it. He is back again on the farm. And now, as a warning and an encouragement for others, he writes that after selling off his farm stock and going into the provision trade with golden visions cheering his sleeping and waking hours he found, alas! that they were but visions, and the realities were anything but golden. Harder work, mentally if not physically, longer hours, disturbed slumbers, failing debtors, small profits, active competition, and a lightened purse at the end, were the results of his experience; and now he rejoices over the one dollar that stays in his pocket more than over the ninety and nine fleeting, deluding dollars that never reached that spot. He is a contented farmer now.

Chronic Founder.—"F. S.," Lancaster Co., Pa. A good plan to follow in cases of chronic founder, for relief—there is no cure—is to procure a water-tight box, about four inches deep, and put the horse's feet into it. The shoes should be removed previously. Then pour hot water into the box, and let the feet remain in the bath for fifteen minutes. Then place plenty of sawdust under the feet, and wet it well with water. Repeat this treatment for a few evenings. The horse should have rest for some days afterwards.

Flexible Double-tree.—"J. S. W.," Goshen, O. There is no advantage gained by attaching a spring to a double-tree. Exactly the same force must be applied in drawing the load; and if an obstacle is struck, although the jar may be eased at the moment, yet the reaction of the spring would exert on the whole exactly the same force on the horse's shoulders as though there were no spring. The principle is in use for other purposes, and therefore is not patentable.

Inflammation of the Udder.—"C. R. S.," Iowa City, Iowa. This disease—or garget, as it is often called—affects cows that have been long in milk as well as fresh cows. It is occasioned by cold, or by lying on wet litter, and in such cases is often an accompaniment of rheumatic fever, which may be quickly fatal if relief is not given. The proper treatment is good nursing, warmth, cooling medicine—as, for instance, one pound Epsom salts, one ounce ginger, one pint molasses, and one quart of warm water. The udder should have a large hot poultice of boiled carrots or scalded bran applied to it, and kept in position by means of a broad bandage around the loins. If possible, surgical assistance should be procured, and if not, the above treatment may be kept up for three days, when, if no improvement has occurred, probably the patient will be past any cure.

Wasting of the Frog.—"T. B. T.," Washington Co., Me. When in consequence of continued paring away of the frog (as is too often the case in the common method of shoeing), it can no longer touch the ground, one of the natural processes by which the foot is kept in a healthy condition is prevented. The frog, when allowed to touch the ground at each step, exerts a pressure upon the bones of the foot which is necessary to stimulate certain needed secretions. When this pressure is not exerted, the secretions are stopped, and the play of the bones one upon another when the foot is in action induces inflammation, which results in what is known as navicular disease. Besides, the protection afforded by the frog in its natural condition prevents these bones from being jarred or bruised, but, the protection being wanting, the bones are injured. In the case in question, after a year's delay, the injury is probably beyond repair. The shoes might be removed, however, and the mare turned into a moist pasture, in the hope that the frog might be stimulated into a new growth. Otherwise we know of no resource but to employ a veterinary surgeon.

Milking-Machine.—"J. H.," Hastings Co., Ontario. In using a milking-machine which merely consists of tubes inserted into the teats, as does the one you describe, the milk flows only by means of gravity, possibly aided by contraction of the udder. Therefore, it is doubtful if the milk can be drawn completely from the udder, as is absolutely necessary, and as may be perfectly well done by the hand of the milker, the action of which is very nearly like that of the calf's mouth in the natural process of sucking.

Cheap Transportation.

The delegates to the National Cheap Transportation Association met in Convention in the City of New York on the 8th day of May. A permanent organization was effected with the Hon. Joseph Quincy, of Massachusetts, President; R. H. Ferguson, of Troy, N. Y., Secretary; and H. K. Thurber, of New York, Treasurer. The following resolutions were adopted:

Whereas, The productive industries of the United

States, plantation and farm, mine and factory, commercial and mercantile, are not only the sources of all our national and individual wealth, but also the element on which our very national and individual existence depends; and

Whereas, All national products are the fruits of labor and capital, and as neither labor nor capital will continue actively employed without an equivalent measurably just; and

Whereas, Great material industries are only sustained and prospered by the interchange of the products of one section or country for those of another; and

Whereas, The existing rates of transportation for the varied products of the Union from one part of the country to another and to foreign countries, as well as the transit cost of the commodities required in exchange, are in many instances injurious, and to certain interests absolutely destructive, arising in part, at least, from an insufficiency of avenues; and

Whereas, The great material want of the nation to-day is relief from the present rates of transit upon American products; therefore

Resolved, That the duty of the hour and the mission of this Association is to obtain from Congress and the several State Legislatures such legislation as may be necessary to control and limit by law within proper constitutional and legitimate limits the rates and charges of existing lines of transportation, to increase where practicable the capacity of our present water-ways, and to add such new avenues, both water and rail, as our immensely increased internal commerce demands; so that the producer may be fairly rewarded for his honest toil, the consumer have cheap products, and our almost limitless supplies find foreign markets at rates to compete with the world.

Second: That the cheap transportation, both of persons and property, being more conducive to the free movement of the people, and the widest interchange and consumption of the products of the different parts of the Union, are essential to the welfare and prosperity of the country.

Third: That the constant and frequent association of the inhabitants of remote parts of the United States is not only desirable but necessary, for the maintenance of a homogeneous and harmonious population within the vast area of our territory.

Fourth: That the best interests of the different parts of the country also demand the freest possible interchange of the industrial products of the varied climates and industries of the United States, so that breadstuffs, textile fibers, coal, lumber, iron, sugar, and various other products, local in their production but general in their consumption, may all reach the consumer at the least practicable cost of transportation; and that an arbitrary and unnecessary tax levied by the transporter, over and above a fair remuneration for the investment, is a burden upon the producer and the consumer that it is the part of wise statesmanship to remove.

Fifth: That certain leading railway corporations of the country, although chartered to subserve the public welfare and endowed with the right of eminent domain solely for that reason, have proved themselves practically monopolies, and become the tools of avaricious and unscrupulous capitalists, to be used to plunder the public, enrich themselves, and impoverish the country through which they run.

Sixth: That many of the railway corporations of the United States have not only disregarded the public convenience and prosperity, but have oppressed the citizen, bribed our legislatures, and defied our executives and judges, and stand to-day the most menacing danger to American liberty and to republican government.

Seventh: That the present system of railway management, having failed to meet the just expectations and demands of a long-suffering people, must be radically reformed and controlled by the strong hand of law, both state and national, and railway corporations compelled to perform their proper functions as the servants and not the masters of the people.

Eighth: That to this end we invoke the aid of all fair-minded men in all States of the Union in expelling and excluding from the halls of legislation, from our executive offices, and from the bench, such railway officials, railway attorneys, or other lirelings as prostitute public office to the base uses of private gain.

Ninth: That leaving different sections and interests that desire cheap transportation to work out the problem in such manner as they may deem best, we earnestly invoke their careful consideration, their energetic action, and their resolute will in regulating and controlling the rates of transportation, and giving remunerative wages to the producer and cheap products to the consumer, untaxed by unearned charges for their carriage.

Tenth: That we invite the people of the various States to organize subsidiary associations, state, county, and town, to coöperate with the National association; that the power to accomplish the purposes desired rests absolutely with the suffering millions; relief is within their reach and control; united action and the near future will give, as certain as its need, for all time, and the good of all, the true solution of the problem of cheap transportation.

A committee was appointed to prepare an address to the people of the United States. It consisted of Josiah Quincy, of Boston, M. B. Wilber, of Michigan, Horace Day, New York, R. H. Ferguson, of Troy, N. Y., H. Bronson, of Kansas, J. A. Noonan, of Wisconsin, and W. H. C. Price, of New York. The convention then adjourned to meet at Washington in January next. During the interval the address will be issued, and organizations will be effected throughout the country to coöperate in the work.

The American Pomological Society.

Many of the members of the Pomological Society have felt highly indignant at the course of the Secretary. This individual has taken advantage of his position to insult the whole agricultural and horticultural press of the country. The gentlemen of the press have abundant cause for dissatisfaction, and all right-thinking members feel mortified that the Society's official publication should be made the medium for the venting of individual spleen. The particular act of the Secretary referred to is a foot-note on page 80 of the last volume of Proceedings, beginning: "The Secretary would here remark that conductors of journals and publishers of books are utterly ignorant of varieties of fruits and plants," etc. As a statement this is false, as is what follows in the remainder of the note. No abuse from the individual who fills the office of secretary would be considered of importance, but when it comes from one speaking as an officer of an important Society in the official record of the Society, the case is bravely altered.

When this note appeared, we held consultation with several officers and members of the Society, and it was concluded best not to wash dirty linen in public, and to let the thing pass until the meeting of the Society in September next. Some of our cotemporaries have thought differently, and have presented the subject to the public in their papers. Rather than be thought indifferent to this insult to the press, we reluctantly change our resolution to keep silent. Perhaps we can best record our protest against this act of the Secretary by giving the remarks of two of our neighbors. The agricultural editor of the Weekly Sun had a most vigorous article upon the subject. Moore's Rural New Yorker of May 3d has the following:

"THE AMERICAN POMOLOGICAL SOCIETY. — Hadn't friend Elliott, Secretary of the American Pomological Society, better keep still? In a recent letter published in a Western paper, he quotes a correspondent as saying that 'one editor of a weekly paper in New York City has tried to break down the Association because it did not meet his views.' Why didn't Elliott tell that correspondent that the statement was false; for no one knows better than Mr. Elliott that it is not true. The fact is, the Secretary made an ass of himself and got criticised for it, as he deserved; and if he don't stop doing it hereafter, the American Pomological Society will find he is too big a burden to carry with comfort. Would Mr. Elliott have the public believe that when any one criticises his injudicious and untruthful statements, the party doing it is trying to 'break down' the American Pomological Society? If that is his object, he will find he has a bigger job on his hands than he has before undertaken."

The Horticulturist for May is still more pointed, it says:

"A NEW DEPARTURE NEEDED."

"Mutterings of discontent have reached us in various ways from many members of the American Pomological Society, respecting its Secretaryship.

"Probably at its coming session next fall, no question will be considered with more anxiety than this, and upon its solution will largely depend the future success of the Society, and harmony be preserved among the leading pomologists of the country.

"The present Secretary has committed an unpardonable blunder, one deeply deplored by the other leading officers of the Society, and has placed himself in a position calculated to draw out much determined and persistent opposition.

"For the past two or more years, flattered with pride of place and an egotistical estimate of his long years of experience in fruits and pomological matters, he has run a free gauntlet with pen and speech, criticising whom he pleased (sometimes most unnecessarily, perhaps even scurrilously, without just cause), and not in the least cautious in the use of uncomplimentary allusions to many of the most influential of the editorial fraternity.

"In the last report of the American Pomological Society, this egotism is carried so far as to appear in the shape of *foot notes* to several pages, wherein he asserts and re-asserts in the most positive manner, the comparative ignorance of the editors of all our Agricultural and Horticultural Journals, concerning fruits; and while not disposed to allow them either the credit or benefit derived from a possible practical experience in fruit-culture, he actually intimates that they are responsible for most of the errors in pomological nomenclature, and are *ignoramuses in general*.

"Only one person with 'long years of experience,' the great 'I am' 'Secretary of American Pomological Society,' is supposed to have a correct knowledge of pomology, and all are expected to play second fiddle to this noble functionary.

"We are supremely disgusted, doubtless the public are too, with these airs of assumption. These *foot notes* we will collate and reproduce in our next number.

"By this abuse of the liberty of his position (for none of the other executive officers saw or knew of these notes until the reports were all printed and ready for distribution), the Secretary has not only arrayed himself in the most direct antagonism to the press of the country, but has thrown to them an *insult*, which every high-minded journalist will resent.

"We say to the American Pomological Society, this is disastrous to you. Your officers should be in perfect harmony with the press. You should seek its coöperation. It is your most efficient ally; insult or despise them, and your own influence and success will wane.

"Take a *new departure;* let your future Secretary be one whom all will delight to honor, and toward whom the press will cheerfully offer every assistance, and who will coöperate in helping your Society toward still greater success and reputation.

"Our thoughts for a long time past have often turned toward one who we believe would receive the unanimous support of the horticultural world; others have lately mentioned the same name to us, and we now break the long-kept silence we have maintained for the past four years, by proposing the nomination for the next Secretaryship in the well known name of Hon. W. C. Flagg, of Illinois, Horticultural Editor of The Prairie Farmer. *Who seconds?*"

The American Pomological Society is largely indebted to the press for the influential position it now holds. The columns of the horticultural and agricultural papers throughout the country have been open to it without cost, and the only return it makes is through its Secretary, who informs the conductors of these journals that they are a set of asses. We shall see what will come of it.

Bee Notes.—Advice to Beginners.

BY M. QUINBY.

It is said that we can accustom ourselves to very monotonous things until they become pleasant—which is probably true. Now, to the man who considers it irksome to open often a hive of bees with movable combs, and look it all through to be sure of its condition, without expecting to do any particular thing, I would say that by doing so he will not only be likely to find it pleasant, but that he will gain courage, learn to avoid stings, get a knowledge of the natural history of the bee, and learn to distinguish between a thrifty and an unthrifty stock. The thriving farmer visits his growing crops scores of times without any idea that there is a necessity for it at the time, but often finds a rail of the fence displaced, a bar left down, or an insect just commencing its ravages, the timely discovery of which saves dollars. Instead of deciding to cut his grain on a particular day of the month, he notes the appearance of the crop as the season advances, and his familiarity with the subject enables him to choose the proper time. Just so the apiarian who is familiar with the appearance of his bees will detect anything amiss or see what is needed. If he is desirous to increase his stocks to the utmost by artificial swarms, he will be guided by the yield of honey and the condition of the old stock as to the best time to make them. If box honey is wanted most, let him supply boxes plentifully. But the hive should be filled with bees before acting in either case.

Hives in which to put bees should be constructed on the following principle: 1st. Let the combs be movable. 2d. Let there be room for at least 150 lbs. of honey. Such hives cost more money, but are cheaper than the writer once made for 37½ cents. A gradual change from the rough box, through several modifications, brought us to the present convenient hive here described. Make the bottom of smooth boards, 21 × 25 inches square; cut out of the center a piece six or eight inches square; cover the upper side of the opening with wire-cloth to prevent a bee getting through. Make a slide for the under side that will graduate the ventilation according to the weather, from none at all to a full-sized entrance for the air. Make a frame of near the following dimensions: Take half-inch strips, an inch and a half wide and

eleven inches long, for the ends. Two more, eighteen inches long by one inch wide, for top and bottom. Drive the nails through the end pieces. The bottom piece should be one-fourth inch from the bottom of hive to give the bees a chance to creep under. If combs are to be transferred, the top may be left square. If combs are to be built, a guide should be put in the center to make them go straight—a triangular piece will do. Take a piece of hoop-iron three-fourths inch wide, three inches long; one-fourth of an inch from one end, bend it at right-angles. Punch two holes through the long part, and nail or screw it on one of the lower corners of the frame. The angle or short part bent should be near an eighth of an inch below the end, that it may hook on another piece of straight hoop-iron, that is nailed on one edge of the bottom the longest way. One edge should project a quarter of an inch beyond the bottom. Hook on the frame, and it stands there firmly. Cut out a thin board just the size of frame, and set one on each side; cover the top with a board or canvas, and you have a hive for bees. Make an entrance in the bottom under the end of frame, opposite to the one hooked. When fixed in this way, it is unnecessary to talk of small or large hives. You have only to add frames until as large as wanted—varying from one to sixteen on this bottom board. A part may be taken out at any time. If box-honey is the object, seven frames are enough. For extracting the honey all will be wanted.

Our boxes are made to set by the side of the frames full of combs, and also on the top of frames, so close that the bees can enter them without moving an inch from the main apartment. The width of the boxes should be calculated so that three or four will be just equal to the length of frame. The length about six inches. The height should be such that two when set on a thin board laid under them would make them just even with the top of frames. We use sixteen at the sides and eight on the top, usually, of full hives. If they are still crowded with bees, and have started combs in boxes on the top, slip them from the center, and let them stand on the boxes at the side, putting eight more in their places; making thirty-two five-pound boxes on at once. The bees enter the top outside ones from those in the middle. When the stock is not strong enough to fill the boxes, take from one or both sides—putting up the boards to keep the bees close. Change the part full ones to the top, or to any other hive to be finished. If there are not bees enough to work in any of the boxes take all off. The boxes are made of glass—described in "Bee-Keeping Explained"—except the end next the comb, which is put in a little narrower than the box to leave a passage for the bees from the combs in the hive. These frames and boxes when all in place must not be exposed to the light and weather. There should be a cover of some kind. We have found no cheaper way than to make it of smooth, nice boards. Let them be eighteen inches wide for the height of hive. Cut the pieces long enough to make a box one inch larger than the bottom board on the back side. The corners simply halved. Batten them outside two inches from the end to prevent warping. Set them together without nailing, holding with latch; or, what is still better, a metal clasp that will draw equally from both ways, is adjusted as readily as a latch, and will hold as firmly as nails—a device of my own, and not patented. Nail a strip on the back side of bottom board, one and a half inch wide, the length of the same end, and one-eighth inch lower than the upper surface of bottom. The two ends may have dowel-pins to enter the bottom to prevent slipping about. A plain board with molding for lid or cover, to make all close, constitutes what may be called a hive, without the boxes and frames. It can be opened when full of bees in a few seconds, and the contents of boxes inspected without any bees flying. Let the front side of hive remain standing in place during the operation. Bees that are at work will enter without hesitation.

To hive a natural swarm in this hive, take off one end and remove the boxes, unless the swarm is large; in that case, let the top ones remain. Set up a panel by the side of frame. Throw over a blanket, and let it hang down on the open side, within an inch of the bottom. Get the bees in a box, and bring them to the stand for a new hive. Let them stand until near sun-down if you choose; then raise the lower edge of blanket six or eight inches; an assistant may hold it until the operator can empty the swarm, as he would so much grain, directly under the frames. Let down the blanket, and they will probably be hived without further trouble. If the queen has her wing cut off, and can not fly, catch her when the swarm issues, and when they begin to return—which they do as soon as the queen is missed—take away the old hive and cover it up with a blanket for a few minutes. Set the new one in its place, and put the queen at the entrance, when they will all enter. They may cluster about the entrance and perhaps choke it up for a time. With the feather end of a quill the bees may be brushed away occasionally, and thus facilitate operations. Leave the old hive in a new place, a rod or more from the old stand. When the stock is in movable combs, and it is certain they are getting honey, and there are bees enough to spare a swarm, lift out a comb, near the middle of a fair day, and if the queen is on it put that with the bees that are on it into a new hive, close it up and set it on the old stand, setting the old hive in a new place, and you have an artificial swarm. One week after the first swarm with an old queen, open the old hive, and cut off all the queen-cells but one, to prevent the second swarm, which should not issue if you want box-honey. If you have a spare fertile queen to introduce, cut off all the cells, smear the queen in honey, and drop her in at the top. She commences laying in a day or two, and a fortnight in breeding is gained, which at this time is almost equivalent to a swarm of bees. For directions for rearing queens, see "Bee-keeping Explained" for the present. This is a good time to introduce an Italian queen to black bees. Much is gained by having hives, frames, and boxes all alike, so that they may be exchanged and fit any place. Very many do not comprehend every point in the hive I have endeavored to describe, and prefer to send for one complete as a pattern to work from, which for some is the surest way. This hive is not patented, and any one has the right to make and use. It combines all the improvements and conveniences that we have been able to obtain up to the present time. The matter of extract-honey is deferred until another month.

A Gallery of Portraits.

On the first page will be found a collection of portraits of bulls of some of the principal breeds of cattle famed for beef, the dairy, or for the yoke. In the center, the artist has very properly placed the noble Shorthorn, in which we have a representative of agricultural aristocracy. The high consideration in which this breed is held, both in America and England, and the correspondingly enormous prices which have been paid by breeders for first-rate specimens, have elevated them far above the reach of ordinary farmers. But yet one can not traverse any district of the country without finding the impress of this breed upon our native stock; and it is quite safe to say that the additional value thereby gained already fairly warrants those who can afford it in paying the extremely high prices which they readily command in the market. On the left is seen the equally favored Jersey. While the former represents the choicest of the beef stock, this breed furnishes the choicest dairy products. The magnificent form of the first is fairly placed in contrast with the delicate figure of the second. Peculiarly gentle, placid, prolific, and profitable, it has become a necessity in every well-appointed dairy, while its beauty renders it a desirable object where ornament is considered before cost. On the right is a representative of a race which, once occupying the position at present held by the Shorthorn, has almost disappeared from view. "Two stars keep not their motion in one sphere," and the Longhorns have been superseded by their rivals the now fashionable Shorthorns. Their place as to utility is filled in a measure by the Holstein and the Hereford, the one probably the heaviest milker as a race, and the other the best feeder and grazier for common purposes of all the breeds now in existence. On either side of the Holstein, which, by the way, is the only representative of Continental European races that we possess in this country to any extent, are the two chief Scotch breeds, the Polled on the right and the Scotch or Highland on the left. Although but little known as yet on our pastures, their active habits, hardy constitutions, and their adaptation to rough or exposed districts seem to make them desirable in many parts of the country where the heavier cattle would deteriorate. The old-fashioned but trustworthy Devon at the lower left-hand remains, as it probably ever will, the best working ox of all the breeds. While these cattle are not generally profitable in the dairy, yet their appearance, characterized by a solid dark red color, very compact round form, with their hardiness, activity, and excellent beef-producing capacity, will always make them not only favorites with many, but a positive necessity in districts similar to New England or the Alleghany ranges. Last and least of all, the little Kerry, aptly placed just beneath his stately cousin, is the most diminutive of all cattle, and on that account, perhaps, is sought after as a pet as much as for the rich milk which it gives in a proportionately very large quantity. Of late the Kerrys have become much more popular than formerly for family cows, on account of their low cost of keeping and the ease with which they can be handled.

Ogden Farm Papers.—No. 40.

I have often been asked to give the total product of my herd, per head. My readers naturally want to know the facts and figures on which I base my recommendation of the Jersey cow as the most profitable for a common farmer to keep. I have not answered these inquiries simply because I could not. I am often away from home, my house is four miles away from the farm, and my time is much engrossed with other affairs.

We are buying and selling pretty constantly, and we keep a good many cows which have passed the period of their usefulness for the dairy simply for the sake of their calves. The most that is possible is to single out particular animals and state their performance. As a perfectly fair specimen of the smaller type of the herd, I will instance the case of "Flora Hinman," a thorough-bred, which weighs now—after dropping her second calf, and when she is three years and four months old—603 lbs. Her first calf was dropped November 10th, 1871, when she was twenty-three months old. The milk did not go into the dairy until Dec. 3d. From that time, we carefully weighed all her milk until April 13th, 1873, when she was dried off preparatory to her second calving (April 23d). I divide her record into 18 periods of four weeks each. It stands as follows: 1st, 500½ lbs.; 2d, 419 lbs.; 3d, 346½ lbs.; 4th, 361½ lbs.; 5th, 389½ lbs.; 6th, 331 lbs.; 7th, 309 lbs.; 8th, 330½ lbs.; 9th, 344½ lbs.; 10th, 306 lbs.; 11th, 265½ lbs.; 12th, 233½ lbs.; 13th, 184½ lbs.; 14th, 209½ lbs.; 15th, 170 lbs.; 16th, 181 lbs.; 17th, 216½ lbs; 18th, 89 lbs. Total in 72 weeks, 5,177½ lbs. This is over 8½ times her own weight at the end of the period—and probably over 10 times her weight at its commencement. Taking $3\frac{25}{100}$ lbs. milk as equal to a quart, she gave 2,408 quarts. I am confident that for the average of her milking period, two winters and one summer, 15 lbs. of her milk would make a pound of butter, and that she actually produced between her two calvings, 345 lbs. of butter. To apply a more severe test, we will take her yield during the year before her second calving, beginning April 22d, 1872. Her yield was 3,160 lbs. of milk, or (by the above computation) 210½ lbs. of butter. She had no extra care, and was never in high condition. No well-kept native dairy cow of average size could possibly have been kept on the same fodder; while to yield as much butter in proportion to her weight she must produce over 300 lbs. in her last year, commencing more than five months after dropping her calf, and her first calf at

that, and counting the full time to her second calving.

I am glad to be able to give the record of the full herd of my neighbor, Mr. Andrew Robeson. Eight Herd-book Jerseys as follows:

	Age.	*Weight, April 23, '73.*
Locket	5 years.	805 lbs.
Gala	5 years.	820 lbs.
Rosemary	4 years.	790 lbs.
Zoe Le Bas	4 years.	830 lbs.
Silver Gray	7 years.	740 lbs.
Alice	8 years.	910 lbs.
Zillah	4 years.	760 lbs.
Cannie	5 years.	1,050 lbs.

NOTE.—Rosemary, Zillah, and Cannie are heavy with calf.

These cows were well kept, and their milk was regularly weighed at each milking from the time their calves were removed until they were dried off, or until the percentage of cream was proven by the lactometer twice a month for the date of this report the whole time. The following is their performance:

Name.	*Date of Beginning Record.*	*Number of Days in Milk.*	*Total Milk in Pounds.*	*Daily Average in Pounds.*	*Average per-centage of Cream.*
Locket	April 10, '72	265	5065½	19 11/100	19.20
Gala	Feb. 12, '72	370	7580½	20 48/100	16.87
Rosemary	April 12, '72	252	5069½	12 16/100	19.65
Zoe Le Bas	April 23, '72	304	4760	15 66/100	16.40
Silver Gray	May 2, '72	303	6054½	19 96/100	15.37
Alice	May 2, '72	300	6706½	22 36/100	16.52
Zillah	June 12, '72	262	6122½	23 37/100	11.49
Cannie	July 9, '72	266	5169	19 43/100	17.62
Average of all		290	5566	19 9/100	16.64

This is a perfectly reliable statement, based on accurate records, and made by a gentleman of character who has spared no pains to get the best cows of the breed, and to keep them in the very best manner. From an intimate personal knowledge of his herd, I do not hesitate to indorse his statements in all particulars. He uses cream in his family without stint, and has not been able to learn from actual trial how much butter his herd would make in a year. It would, however, be safe to calculate that, taking the year through, the cream from Jersey cows will make a pound of butter per quart. Mr. Thomas Horsfall, of England—the best authority on this subject—found, on two trials, that 15 quarts of cream yielded 24 3/4 ounces of butter per quart, and that 14 quarts of cream yielded 25 1/7 ounces per quart. His milk was set in shallow pans, and the cream would naturally dry out much more than in the lactometer; but this would not increase the rate from 16 ounces to 25 ounces. In my own practice (using deep cans, which expose even less surface to the air than the lactometer does), I find that one quart of cream will make more than one pound of butter. Now, Mr. Robeson's herd gave, during an average period of 290 days, 430 quarts of cream per cow, and "of the whole amount of cream he churned during the year 1,409¼ quarts, and made, therefrom, 1,338¾ pounds butter. This shows a yearly average of 407 pounds butter per cow."

The story is a large one, and I am quite prepared to have those who do not know me call it a tough one—but I believe it, nevertheless. At the same time, it is not an example that many can follow. The breeding herd at Ogden Farm won't begin to equal it. Indeed, very few can afford the money, nor have they the intelligent skill required to get together eight Herd-book Jerseys of such excellence. These have been bought in Jersey and here, and bred and weeded out for years with an eye to securing as nearly absolute perfection as has been possible within the time. That they will still further improve under their intelligent management is unquestionable.

While the results of this instance of successful farming are beyond the probable reach of any "ordinary" farmer, it is none the less valuable as an example. In any well-regulated dairy in which only common cows are kept, I think that an average annual yield of *one-half* that of Mr. Robeson's Jerseys, or 203 lbs., would be considered very satisfactory, and this from cows of greater weight, and so requiring more food. The question arises: How can we make a fair beginning on the other half?—how get to 300 lbs? The answer involves a good many things, but it will depend more on the infusion of Jersey blood than on anything else. A half-bred Jersey is *very much* better than a native, and a three-quarter-bred one is still better. One bull will suffice to inaugurate an improvement in a large herd, which in even two generations (or in six or eight years) will more than double the profit of the dairy. Even a small addition to the yield will double the profit, for it will cost no more to support the grades than the natives, the quality will be better (and the selling price higher), and none of the expenses will be materially increased.

In this connection it may be well to quote from the Jersey Herd Register the statement of Mr. Chas. M. Beach, of Hartford, Ct. (personally known to me as a careful and trustworthy observer). He "made a careful experiment with three pure Jersey cows, three grade cows, and three native cows, an experiment which was carefully conducted for a week. The animals were in essentially the same condition, and were kept on the same food. Each lot averaged about the same time for calving. It was found that to make one pound of butter the following quantity of milk from each sort of cow was required: Three pure Jerseys, 6¼ quarts; three grades, 8¼ quarts; three natives, 11 quarts. According to this, a Jersey cow giving about 12¾ quarts of milk per day, or a grade giving 16½ quarts, would make as much butter as a native cow giving 22 quarts." Of course, the grades must vary according to their proportion of Jersey blood. In Mr. Beach's experiment, one was one-half Jersey, one three-quarters, and one seven-eighths.

Those who believe that the best Jerseys have the "solid color and full black points" will not find their theories sustained by an examination of Mr. Robeson's herd. I think he has not one animal of this character. He prefers the lighter fawns and grays, with some white, and his imported bull "Orange-peel," which he himself selected in Jersey, was light fawn with considerable white. At the same time, color is only a secondary object with him, and no promising heifer is sold until her milking quality has been proven. Mr. Thomas Motley, who is one of the oldest and one of the very best Jersey breeders in New England, is now raising for his own use a bull that is fully one-third white.

The solid color men will be glad, on the other hand, to know that the cattle which Col. R. M. Hoe recently sold at auction for very high prices—a nine-months-old bull for $560, and four cows respectively for $560, $640, $700, and $605—were mainly of their favorite marking. This sale indicates that color brings the highest prices. Shall we then breed mainly for color? I decidedly shall not. The object is not a wise one, and to seek it because of temporary high prices is a prostitution of breeding that can not result in the good of the race nor in the good of the dairyman. The Jerseys as a race are very valuable to the country, not because of their conformity to a passing fashion, but because of their ability to yield a large product of good butter, and it is their value in this respect that must redound to the greatest eventual profit of their breeders. Then again, on the mere score of beauty, I would be glad to have the very blackest of the black-point men see Mr. Robeson's cattle tethered on his lawn. They will answer this disputed question more convincingly than any writing can do.

Much has been said and written about the best treatment of calves, and so many have advised their immediate removal that we this spring ventured to try it. Out of four so treated (all heifers, worth $100 each when they were dropped), one died before it was a week old, another is scouring so badly that we have but little hope of its recovery, and a third is ailing and weakly. We have had quite enough of this treatment, and shall return to our custom of leaving all calves with their mothers until they are at least three days old, and longer if necessary to start them fairly and vigorously on the road of life, a practice which has hitherto produced the most satisfactory results.

I have also experimented—until I have regretted it—on another theory of some modern breeders of Jerseys—that is, to milk the cows quite up to the time of calving, if possible. In every case, I am convinced that real and probably permanent injury has resulted. The idea advanced was that a Jersey cow has no other purpose but to bring calves and to produce milk, and that she should be trained to the fullest and most persistent exercise of the lacteal function. The subject has been presented to me so long and so persuasively, and by men whose opinion seemed so well worthy of respect, that I had come to more than half believe it, and have tried the experiment this spring with several animals. In every case there has been trouble with the udder, and thus far the flow of milk is less than it was after the previous calving. The calves have not been materially affected by it, but the mothers have been in every instance. Hereafter, we shall endeavor to dry off all of the cows a month before calving. Up to that time it is well to keep the milk flowing (if only a pint a day), and with Jerseys it is almost always easy to do this; but after that the milking should cease, and the udder should be allowed to become entirely empty of milk preparatory to the commencement of its new period of activity—"springing" regularly and naturally, and having no trace of the old love when it begins with the new.

Another experiment we are now making, that will have more influence on the prosperity of the farm than any other could have (for the Labor question is become the most vital of all), Haubrich and his family have gone—gone to the West, that ultimate haven of all immigrating Deutschers—and the Dudeldorfers, whom I hunted up in Germany last autumn, are installed in their place. How it will work, I don't know. Thus far, it seems a very good combination of new broom and young blood, and we hope for a continuance of the improvement; but one is apt often to sigh for the good old days when good American farm-hands worked contentedly for years on the same farm.

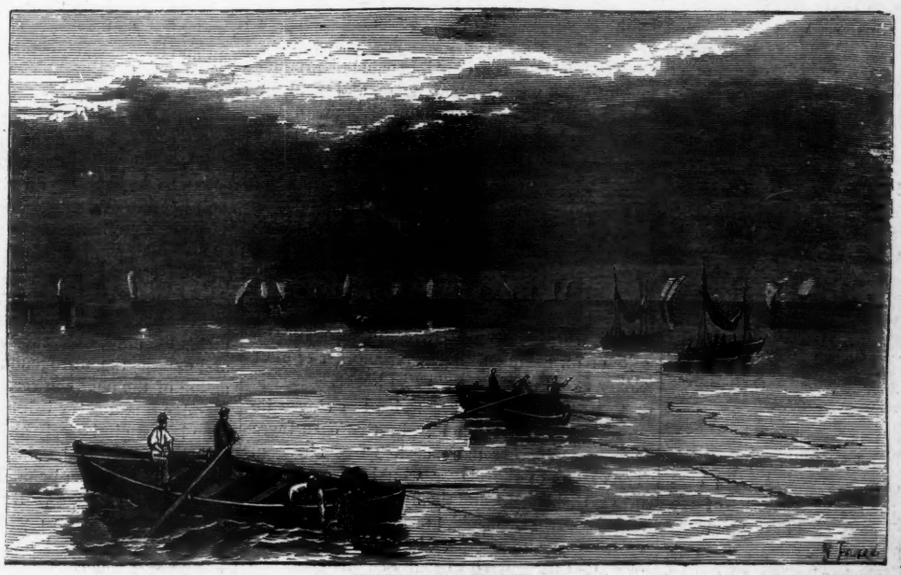
The Cedar-bird.

The farmer or fruit-grower has a way of classifying birds very different from that of the naturalist. He makes two great classes only, friends and foes, and his chief interest in any given species is to know in which class to place it. Unfortunately, the boundary between these two divisions is a not very definite one, and if we were asked upon which side to place the Cedar-bird we should have to give the Frenchman's ever-ready answer, "That depends." If the bird be watched during grub-time—we mean the season of grubs — when caterpillars, tent and others, and worms, canker and others, do mostly abound, it would be ranked at once among the useful ones. All these soft creeping things, so destructive to foliage, are choice morsels to young Cedar-birds, and the old ones display an industry in removing these enemies to our trees and shrubs that is none the less useful to us on account of its being prompted by a selfish motive in them. The little family in the nest must be fed, and the busy parents in foraging for their young dispose of multitudes of our annoying insects. But in cherry-time! Then the Cedar-bird appears in altogether a different light. One of their little flocks—they usually go in squads of a dozen or twenty—will make cherries disappear with a rapidity only equaled by a boy who is in somebody else's cherry-tree, and is afraid the owner will catch him. The young birds seem by this time to have become decided vegetarians. Animal food was well enough in cooler weather and for growing young, but in the hot July days old and young prefer the refreshing fruit. At this season, the fruit-grower is quite sure that the Cedar-bird belongs among his enemies, and forgetful of former good offices bangs away at him with a clear conscience. It is not the cherry alone that this bird fancies, but apples and other fruits are quite to its taste; but perhaps we notice the loss of the early fruit more readily. When the cherries disappear as fast as they ripen, we are not in the proper mental condition to strike a fair balance-sheet with the birds. If the insects were unmolested, there would be no leaves, and consequently no fruit. If the birds take all the insects, and then take all the fruit, we are just where we would have been had the birds not visited us. The question seems to be, Can we not raise fruit enough for the birds and ourselves, too? In a natural state of things, the balance between plant, insect, and bird is well enough preserved, neither predominating to the serious detriment of the other. If the insect-eating birds become too numerous, bird-eating birds and other animals keep them in check. In our cultivation, we have disturbed this nice adjustment of things. By destroying the natural food of insects we concentrate them upon our cultivated plants, and as a matter of course the birds follow the insects. Fruit-growing, like all other cultivation, is a constant struggle with difficulties, and this problem of the relation of birds to horticulture is one of the difficult ones. Those who have given the most thought to the matter regard birds upon the whole as beneficial, and that, although we are obliged in many cases to pay a heavy price for their services, it is true economy to accept them. A closer observation of the habits of all our common birds at all seasons while they are with us, will enable us to judge them more fairly than we are in the habit of doing. The only exact way in which to come at a proper estimate of the usefulness or otherwise of any species, is to kill one each week or two of the season, and put the contents of its stomach into a box or bottle, and label it with the name of the bird and the date. At the end of the season this collection will show at a glance what work the species has done. The Cedar-bird (*Ampelis cedrorum*) is almost too well known to need a description. Our engraving gives its form; its length is 7¼ inches; its plumage is of the most neat and silky character, and though not brilliant is called beautiful.

THE CEDAR-BIRD.—(*Ampelis cedrorum.*)

The Sardine Fishery.

"What are Sardines?" asks a correspondent. This is a question which has before now puzzled the naturalists. The name was originally applied to a small fish taken off the coast of Sardinia, *Clupea Sardina*, and is a mature fish, while the greater bulk of the Sardines of commerce are caught off the north-west coast of France, and are the young of the Pilchard, another species of Clupea (*C. pilchardus*), which when mature is about the size of a Herring. The young of several other kind of fish also find their way into the market as Sardines, and when properly preserved are undistinguishable from the genuine except by those wise in such matters. Our engraving represents a scene at one of the celebrated Sardine localities off the



FISHING FOR SARDINES.

coast of France. The small fish appear in myriads, and are caught in nets, a bait—the spawn of other fish—being thrown over to keep the schools together. The fishermen sell their catch to the establishments that make a business of preserving them. The Sardines are cleaned and the heads removed, sprinkled with salt, and then slightly dried on wicker frames. They are then cooked in boiling olive oil, drained, placed in tin cans or boxes, which are filled up with fresh boiling oil, and the lid carefully soldered on. The cases, after stamping and labeling, are ready for the market. The Sardine is a minute fish, and no one person consumes a great number, yet in the aggregate the amount expended for them is something astonishing. Nantes is the head-quarters of the business, and over three thousand boats, carrying five men each, belong to that port, and the annual export from that place is some 30,000,000 cans. Sardines are regarded as an article of luxury, rather than as a staple food. They are so exceedingly rich, that those of weak digestive powers can not tolerate them. Their chief consumption is at lunches, upon pic-nic and other pleasure parties, and by travelers. For these purposes they are very popular, as they require no preparation. By way of variety, they form an acceptable addition to the breakfast table, although they are more frequently used thus by Europeans than by Americans.

Walks and Talks on the Farm.—No. 114.

J. J. Thomas writes: "I would be glad to see in the 'Walks and Talks on the Farm' some remarks on the common opinion that manure spread in summer wastes by exposure to the air. I have not performed experiments in this way, but have long been in the practice of spreading manure both in autumn and winter, more especially on grass to be plowed under for corn in spring. The complete diffusion of the soluble manure by rains and melting snows renders it about twice as useful as by the more imperfect mechanical intermixture when spread and plowed under in spring Now, suppose manure is spread early in summer on grass or other land, will not rains wash it into the soil equally well? If the summer is dry, why will not the manure lie on the surface until the rain comes? What becomes of it? I am aware that this inquiry is often made, but I would like to have an answer, and would esteem it an especial favor."

If we spread say 15 tons of ordinary barn-yard manure on an acre of grass-land in the spring it makes quite a show. But harrow it two or three times at intervals of a few days, and it is surprising how rapidly it disappears. "What becomes of it?" This 15 tons of ordinary manure would probably be composed of

Water	22,000 lbs.
Carbonaceous matter	7,000 lbs.
Mineral matter	850 lbs.
Nitrogen	150 lbs.
	30,000 lbs.

In our dry climate and in hot summer weather the 22,000 lbs. of water would soon evaporate. We should then have 8,000 lbs. of dry matter spread over an acre, or not quite three ounces on a square foot. If this matter was reduced to powder it could hardly be seen on the surface of the land, and we might think that the manure had gone to waste, while in point of fact nothing had been lost but water. In this 8,000 lbs. of dry manure there is 7,000 lbs. of carbon, hydrogen, and oxygen. It is believed to possess comparatively little fertilizing value. All that we have to look to, then, is the 850 lbs. of mineral matter, and the 150 lbs. of nitrogen. No one supposes that the mineral matter will waste by exposure to the atmosphere. The only risk of loss is from the evaporation of the 150 lbs. of nitrogen. It was formerly supposed that the nitrogen in fermented manure existed in the form of carbonate of ammonia, and that when the manure was exposed to the atmosphere the ammonia evaporated. The carbonate of ammonia *would* evaporate; but it has been ascertained that barn-yard manure rarely contains any carbonate of ammonia.

If we should spread 15 tons of green clover on an acre of land we should furnish

Water	24,000 lbs.
Carbon, etc.	5,420 lbs.
Mineral matter	400 lbs.
Nitrogen	180 lbs.
	30,000 lbs.

The nitrogen in the clover exists in the form of substances analogous to albumen or white of egg, and which it is convenient to speak of as "albuminoids." They are what are sometimes called the "flesh-forming principles" of food, as distinguished from the carbonaceous or "heat-forming principles." The 15 tons of green clover contain a little over half a ton of albuminoids, and nearly 2¼ tons of carbonaceous matter. As before stated, these albuminoids in the 15 tons of green clover contain 180 lbs. of nitrogen. For *food*, the albuminoids, as such, in connection with the carbonaceous matter, are of great value as food for our animals; but *for manure* the albuminoids are valuable only for the nitrogen which they contain. The plants do not need the albumen as such. It must first be decomposed and converted into ammonia or nitric acid. How to effect this change without loss and at the least expense is what we want to ascertain.

If we plow under the 15 tons of green clover, it will gradually decompose, and sooner or later the albuminoids, with more or less loss of nitrogen in the gaseous form, will be converted into ammonia or nitric acid, and be taken up by the subsequent crops. There are two objections to this plan. (1st.) We plow under about 3,500 lbs. of nutritious food, capable of producing flesh, fat, milk, butter, cheese, and wool, for the mere purpose of furnishing plants with 180 lbs. of nitrogen; and (2d) we do not furnish this nitrogen in a form immediately available as food for plants. It is quite probable that the wheat sown on the land where clover is plowed under does not get more than from one third to one half the nitrogen. The remainder lies dormant in the soil, or is inaccessible to the roots of wheat, and may remain in the soil until taken up by the next crop of clover. In other words, we plow under clover, in part, for the sake of furnishing nitrogen for another crop of clover two, three, or four years hence.

Another plan would be to let the clover lie on the surface of the land. In this case there is danger of losing more or less free nitrogen. The carbon of the clover would be converted into carbonic acid, and the hydrogen into water, and the nitrogen would, to some extent at least, be set free and escape. I do not think, however, that there would usually be any great loss of nitrogen. The half-ton of albuminoids contained in the 15 tons of green clover would be spread on the surface of an acre of land, and would be exposed to the solvent action of a large quantity of water. An inch of rain gives about 225,000 lbs. of water per acre, and it would seem that when the clover or barn-yard manure was exposed to a few of our drenching rains there would not be much soluble matter left in it. Dr. Voelcker found only 8.50 per cent of albuminoids in clover hay that had been exposed to rain in the field after being cut; while good clover hay contains nearly 16 per cent of albuminoids. The rain had dissolved the albuminoids and carried them into the soil.

But, as before remarked, what the plants need is nitric acid or ammonia; and after the albuminoids are washed into the soil they must be decomposed before they become food for plants. When dissolved in water and carried into the soil, there can be little doubt that this decomposition would proceed much more rapidly than when the clover is plowed under.

If, instead of using this 15 tons of green clover for manure, it was made into hay and fed to animals, and all the liquid and solid excrements carefully saved, we should lose perhaps five per cent of the nitrogen, which is retained in the wool, flesh, etc. But the nitrogen in the excrements is in a very different form from that in the clover. The nitrogen exists largely in the form of urea, a substance containing over 46 per cent of nitrogen, and which as long as it is dry can be preserved for any length of time without decomposition or loss, but when in solution rapidly changes into carbonate of ammonia, etc.

If all the nitrogen in manure existed in the form of urea, uric acid, hippuric acid, urate of ammonia, etc., there would probably be no special advantage in fermenting manure before applying it to the land. The experiments of Dr. Cameron and Prof. S. W. Johnson seem to prove that plants can take up these substances. But still the grand fact remains that in Lawe's and Gilbert's experiments the nitrogen in barn-yard manure does not produce as marked an effect on the crops as the nitrogen in ammonia-salts and nitrates. In other words, the nitrogen in barn-yard manure is largely unavailable.

Barn-yard manure contains more or less straw, and the solid excrements also contain a considerable proportion of undigested material. It is the nitrogen in these substances that is unavailable. And hence the experiments of Johnson and Cameron, showing that plants can take up urea, are not inconsistent with the field experiments of Lawes and Gilbert showing that much of the nitrogen in barn-yard manure will remain dormant in the soil for many years.

What we now need to discover is some method of rendering all the nitrogen in barn-yard manure available. Mr. Thomas, while he does not directly say so, is evidently in favor of spreading the manure on the surface of the land, and letting it lie exposed to the action of the air and rains. The air, aided by the damp soil, dews, etc., would soften and break to pieces the hard, external covering of the straw, and expose the nitrogenous matter, etc., to the action of the next shower of rain, which would dissolve it and carry it into the land, and distribute it more intimately among the particles of soil than it could be done by any mechanical means. There can be no doubt that this plan has many advantages. But we want more facts before we can decide whether there is not a better way. I should not hesitate to adopt it wherever it was convenient.

I prefer to rot manure as thoroughly as possible before applying it to the land. But it is not always easy to do this without loss from leach-

ing. Where it can be well rotted without loss there is manifestly great advantage in doing so. And when it is thoroughly decomposed, I think, where it is convenient, it is better, so far as the immediate effect is concerned, to spread it on the surface of the land rather than to plow it under. But of course much depends on circumstances.

A young farmer in Delaware writes: "In your 'Walks and Talks' for April you say 'there is no necessity for adding sulphate of lime to the manure heap.' I am a young man just starting out on a farm, after working it three years to learn how, rent free and stock and tools furnished. I am making a manure heap, and have been mixing sulphate of lime or plaster pretty thoroughly through it to assist in the fermentation, as I thought, but you have thrown cold water on my hopes."

I am sorry to have done so. The plaster will do no harm, and may do more or less good. But it always makes me savage when agricultural writers lead young men to think that by doing some little thing, such as sowing plaster on a manure heap, or making a "compost" of this or that material, they are going to make their farms and themselves rich. There is no such easy method of making land rich.

"The poorest field on the farm," my correspondent continues, "and which has been in grass the longest, I intend to break up and put in corn. It contains about 16 acres. It is a rather heavy clay loam, with a clay subsoil. I intended to plow it, say six inches deep, and subsoil it, and plant in the old way. But after reading the April number of the *American Agriculturist* I have changed my mind, and think of running the land out one way and manuring in the drills, and then put hen-manure on the corn after it comes up. What do you think of this plan?"

You had better follow the "old way." It is a good deal of work to furrow out and manure 16 acres of corn. It will delay the planting. And besides, sod land plowed this spring can not be furrowed out deep enough to hold the manure. As you get your land "rent free," you can afford to adopt the "slow method" of farming. Summer-fallow your clay land, or if you do not want to do this, plant your corn in hills, cultivate thoroughly, and try to be content with an ordinary crop for this year. Save your manure, and apply it to the grass-land this fall that you intend to raise corn on next summer. You will be the gainer in the end.

The farmers of the West are grumbling about the high rates of freight—and not without cause—but they are no worse off than we are here. *We* grumble because the railroads will carry wheat and corn and cattle from the West at so much lower rates than they will carry ours. I have no doubt, however, that good will grow out of this agitation.

Mr. Bingham writes me in regard to some experiments he has made in fattening pigs on raw corn as compared with cooked corn-meal. The raw corn was decidedly the best. He seems to have been much surprised at the result. I have never been an enthusiastic advocate of cooking. If I was trying to see how fast I could make a pig grow, I would give him both cooked and uncooked food. I think it very likely that the cooked mush contained too much water. If the pigs had been allowed to eat what mush they wanted, and afterwards given all the raw corn they would eat, the result might have been very different. It ought to be distinctly understood that the only object of cooking is to enable the animals to eat and digest more food. We cook, not to save food, but to save digestion. If the pigs can eat and digest all the food they can assimilate there is nothing to be gained by cooking—time, labor, and fuel are all thrown away.

Mr. B. sends me a sample of "ship-stuff" that he buys for $12 per ton. It is a prime article. Common bran he gets for $8 per ton. If I could get food at such prices I do not think I should spend much time in cooking it. I have to pay $20 per ton for bran, and $28 for corn-meal. If I can make anything in producing pork—and taking one year with another I think I can—Mr. B. ought to get rich, for he can get nearly as much for his pork as I can.

We have just lost a valuable Cotswold ewe. She was apparently well until thirty-six hours ago, when we observed that she separated from the rest of the flock. Her head soon commenced to swell. She grew rapidly worse, seemed to have great difficulty in breathing, and in thirty-six hours was dead. Two years ago I lost a sheep in the same way, but not so suddenly.

English farmers often talk about a "rent-paying sheep." I suppose they mean a sheep that is kept by a farmer, rather than a breeder, for no other purpose than to produce mutton and wool. The breeders keep sheep to *show at the Fairs*, and to sell to other breeders and farmers. It is necessary to have such men. They take great pains to improve the breeds and keep them pure. But I think it will be found that neither here nor in England are the "rent-paying" sheep pure-bred. I do not believe that for the mere purpose of raising mutton and wool it will pay to keep a flock of pure-bred South-Downs, Leicester, Cotswold, or Lincoln sheep. I do not think it would pay even in England, and it certainly will not pay here. The "rent-paying" sheep here is a grade. I have to-day (April 19th) weighed a grade Cotswold that is not to exceed a year old. He is out of a common Merino ewe that will not weigh over 80 lbs. He is covered with a splendid fleece of long combing-wool nearly as good as his pure-bred Cotswold sire. He is healthy and hardy, and weighed to-day 166 lbs. He has, of course, been well fed. But it is clear to my mind that if we can take common Merino ewes, and by the use of a pure-bred Cotswold or Leicester ram raise lambs that will weigh after shearing say 150 lbs., it will pay to feed them well.

Three of my pure-bred Cotswold ram lambs weighed to-day 165 lbs., 172 lbs., and 185 lbs. The last was born April 20th, and if to-morrow was not Sunday I would have weighed him on his birthday. As it is, I suppose I may say, "I have a Cotswold sheep, *less than a year old*, that weighs 185 lbs.!" According to the usual estimate of dividing the live-weight by seven to get at the dressed weight per quarter, he would dress 26 lbs. per quarter. I do not think this is bad, but great size is the very last thing I aim at in breeding.

"If it is true," remarks the Deacon, "that we have to draw over 11 tons of water in 15 tons of manure, I think we had better plow under the clover, or at any rate feed it off on the land." I have no objection to the latter plan. It has been well said that sheep are the cheapest manure-carts. But what we should aim at is to make our manure richer. It would not be a difficult matter to make one ton of manure worth as much as four or five tons of the stuff that some farmers draw out of the yards in spring, and which they call manure.

I was glad to see Col. Waring's remarks about the English hay-stacks. I stack three fourths of my hay in the field where it grows. If I had the money to spare, I should build a big barn, but I thought I could spend my money to better advantage in underdraining and improving the land. And in the mean time I try to persuade myself that there are some advantages in stacking hay in the field. But I know full well that I have some years had more hay damaged in the stacks than would pay the interest on a three-thousand-dollar barn. This was before I learned what a comparatively cheap and simple matter it is to thatch the stacks. I notice in the English agricultural papers that they now have a machine in England for thatching. In fact, I suppose they have different kinds, for one farmer in Shropshire says he finds that the "lock-stitch" machine is the best. From this I conclude it is something on the principle of a sewing-machine. Some of our manufacturers should look into the matter. If the machines are not too costly there would be an extensive demand for them.

I am pretty well satisfied that the true plan is to cut up into chaff all the hay and straw that we feed out to sheep, horses, and cattle. And if the barn is properly arranged for the purpose, a good plan would be to stack the hay in the field; draw it to the barn in the winter; cut it up as we draw it, and have a carrier attached to the machine that would elevate the chaff into the bay or loft. There are, of course, many farms where such a plan will not work, but it would suit me exactly if I could arrange my barns and sheds so that the sheep and cows could be fed the chaff and roots with little labor in handling.

I wish some of our barn architects would turn their attention to designing a barn for feeding on this plan, more especially for sheep. Nearly all our good sheep barns are designed for feeding long hay. But I feel sure that there is great economy in chaffing clover hay for sheep. A given space, too, will hold much more chaffed hay than of uncut hay, and we should require less barn room. Then, too, in feeding long hay we have to go on to the mow to throw down the hay every time we want to feed the sheep; but with chaff this is not necessary. It will fall of its own accord into the feeding-room as fast as it is removed. Can any one give me a description of a good sheep barn on this plan? I want something cheap and simple, with no reference to steaming—say a side-hill barn, that with sheds, etc., would accommodate 200 long-wooled sheep.

Building Dams.

J. H. R. and others will find their inquiries about the construction of dams for small streams answered in this article. The dams here described are suitable for streams of less than 100 feet in width, and in which the head of water to be raised is not over 10 feet. They are formed of timber and loose rock. The timber may be used in the rough, flattened slightly where the cross timbers rest upon each other in cribs such as those shown at figures 1 and 2; or the timber may be squared and framed to-

gether as in that shown at figure 3. Figure 1 shows a crib in very common use, built of round logs. For a stream of 50 feet in width they may

Fig. 1.—COMMON LOG-CRIB.

be made 8 feet long and 6 feet wide, and for larger streams in proportion. The bottom of the crib should have at least four cross-pieces resting on the lowest logs, to which they should be pinned with 2-inch oak pins. The stones with which the crib is filled rest on these cross-pieces and holds the crib to the bottom. The crib may be built on shore until three or four logs high, when it may be launched and finished in the water, and kept in its place with ropes until sunk and filled with stone. The logs should be all firmly pinned together. The cribs may be placed at such distances apart as may be required by the velocity of the stream and the pressure of the water the dam is required to re-

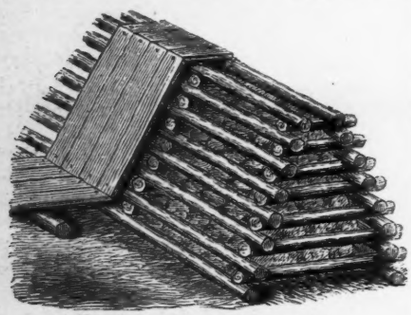


Fig. 2.—CRIB OF SPLICED LOGS.

sist. The intervening spaces may be covered by logs reaching from one crib to another and connecting altogether. Stone is then filled in between them, the bottom is made tight with brush and clay, and earth is thrown in to fill the rear of the dam, or an apron of plank closely fitted is placed at an angle of about 30 degrees, with an apron also of plank at the lower side, and the top of the cribs is also planked over. Another serviceable dam is shown at figure 2. It is built of rough timbers, not in separate

Fig. 3.—SILL AND POST DAM.

cribs, but the timbers are spliced together as may be needed, and they reach quite across the stream. The figure shows a part only of the structure.

Cross timbers are placed about 10 feet or less apart to bind the frame together, and are pinned or spiked firmly. These cross timbers decrease in length as the frame is built up and the sides meet at the top. The bottom is to be filled with brush and clay, and the front and rear planked tightly. This dam may be made to curve toward the current, which will add much to its strength. On the whole, perhaps this is the simplest, cheapest, and most effective dam of this character that can be built. Another method very suitable for small streams on farms where water power is wanted, or water for irrigation, is shown at fig. 3. This is made by the use of frames consisting of a sill, a post, and one brace, mortised together. As many of these are needed as will permit them to be placed six feet apart across the stream. They are connected by planks 12 feet long spiked on to the sills so as to break joints, the ends of each alternate plank resting on each alternate sill at the lower side of the dam, and these form an apron on which the water falls. Planks are fitted closely on the upper side of the posts, stones are filled in behind them, and planks may be spiked on to the braces forming a sloping water way. The bottom should be made water-tight in the usual way by means of fine brush and clay rammed down, or plenty of earth worked in amongst the brush. If the plank covering of a dam leaks it may be made tight by throwing sawdust or fine tan-bark into the stream above the dam, and stirring it and the water together. Leaks in the bottom of a dam may be discovered by stirring a small quantity of sawdust in the water at the bottom of the stream, and noticing the place where it is drawn through by the current. Such a leak may be stopped by forcing a bunch of straw, marsh hay, or fine brush into the hole, and then dumping a few barrow loads of earth over the spot. Musk-rats are not likely to interfere with such dams as are here described.

A Home-made Barn-Pail.

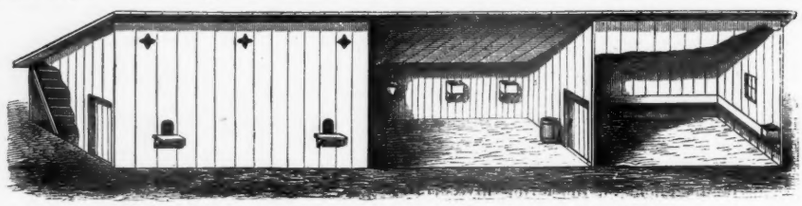
A correspondent favors us with a sketch of a barn pail which has the merits, far from inconsiderable, of costing no money and of being very durable and useful. It is shown in the engraving above, and consists of a butter firkin, which, after filling a term of service as such, becomes of still farther use, and renews its youth as a water-bucket. A stout hoop of ash is made to serve as a handle, by being affixed by wooden pins, as shown in the engraving. Such a pail stands much rougher usage than the ordinary pail, the life of which around the barn is but short.

BARN-PAIL.

CARBOLIC ACID FOR PLEURO-PNEUMONIA.—Now that the cattle in New Jersey have become affected with this disorder, it is of interest to notice the result of some preventive experiments which have been made in England with carbolic acid. In a stable in which there were some sick animals and also well ones, sacks kept saturated with a solution of the common acid in 20 parts of water were hung up in the stalls before each animal, so that the vapor could be breathed by them. The consequence was that the progress of the disease was stayed, and although the treatment did not cure the sick it preserved the health of the well animals.

A Farm Poultry-House.

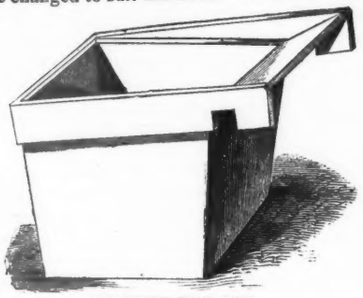
"A Constant Reader" is in want of a poultry house with separate apartments for roosting, laying, and sitting, that shall be constructed easily and with a moderate outlay. Doubtless, many other of our readers want the same thing, and we present to them an engraving of a combined roosting, sitting, and laying-house, which we have found very convenient, in which we



POULTRY-HOUSE WITH LAYING, SITTING AND ROOSTING APARTMENTS.

kept 150 hens and hatched out nearly a thousand young chickens. For this purpose, the main part of the building, the roosting-house, shown in the engraving at the left hand, was 12 × 16 feet, and 12 feet high at front, and 8 feet at the rear, with a sloping roof. The floor was earth, a row of bricks was partly bedded into the earth, and pine scantling, 4 inches square, was laid upon them, with the ends halved and jointed together. These were the sills of the building. The boards were nailed to these sills, commencing at the corners, and scantling of 2 × 4 inches were nailed to them for plates. The building was then boarded up, rafters of inch-boards were let into the front and rear and nailed, sheeting of inch-boards and a roof of shingles was then put on, a door was fitted, entrance holes with fly benches two feet from the ground were made, and a roosting-ladder of sassafras poles, on which, by the way, we never saw any lice, completed the whole. The whole was put up in two days. To this was added the open shed adjoining, and the sitting-house built in the same manner, each of the same size, making the whole 48 feet long. Nests were provided in the open shed and in the roosting-house, all of loose boxes painted with crude petroleum inside and out. When a hen "set," the box and its occupant were removed at night into the sitting-house at the right-hand in the engraving, and placed on the shelf which was fixed around it. There she was kept shut up, but carefully attended to and watched, until the chicks were hatched, when, if she felt disposed, she remained as long as was agreeable, the chicks being removed as they appeared, and fresh eggs being put under her. In this way, some hens brought out two or three broods before their patience was exhausted. This house was cleaned out at night, fresh food and water and sand for baths were put in, and in the daytime it was kept very quiet. When a hen left her nest, which rarely happened, she was taken out and another quietly put on. This may be done readily with Dorkings or Brahmas that are kept tame and used quietly. The house was whitewashed twice through the season, and

on the whole was all that could be desired. The roosting-house had ventilators cut at the upper part, and by not allowing any nests to be made on the ground, skunks and other vermin were not encouraged, and committed no depredations. The size of these buildings may be changed to suit the needs of a flock of any



PORTABLE FEED-BOX.

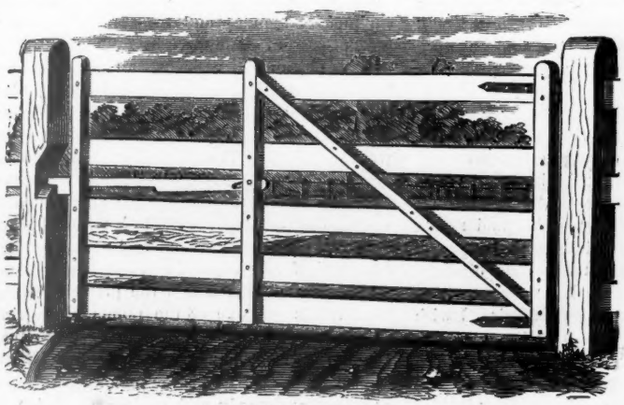
smaller number, or another set of buildings might be added if the flock should be increased.

A Portable Feed-Box.

J. A. Flory, Cass Co., Ind., sends us a sketch of a feed-box which he uses when at work in the fields, and which may be hung on to a board fence. It consists, as shown in the accompanying engraving, of a box of any desired size, to which side-pieces are fastened which project in front for a few inches, and which are notched to fit the fence-boards on which it may be hung. Between these side-pieces there is a shelf or sloping bench nailed, which serves to enable the feed or grain to be poured into the box from the other side of the fence to that on which it may be hung, if it is ever needed to do so. It is very probable that many of our readers will be grateful to our young correspondent for this hint, from which they may make for themselves a very useful and handy feed-box. With such a one there will be no need to feed oats to a horse on the ground, as we have seen done occasionally. or in a loose pail, which is overset and possibly trampled on and spoiled.

An Improved Farm Gate.

"A Correspondent" sends us his method of making gates, which is an improvement in several respects over those in common use. The posts are set in the usual manner, but a round log is laid between them just beneath the surface of the ground, which prevents dogs or hogs from the road forcing a passage by scratching or rooting the earth away. The latch-post is notched, and the catch is sunk within the notch, so that there is nothing to project to interfere with passing cattle, horses, or carriages, or to be interfered with by them. The gate is made of strips of three-quarter-inch or inch boards, and is very light. The upright pieces are nailed on each side of the bars with wrought nails, or bolted with light carriage bolts; the diagonal brace is also fastened in the same manner. The latch is made with a sloping slot, so that when it is pushed back it is raised, and when released falls of its own weight into its usual position. It may be made either to rise and fall into the catch or to slip back and forth into it. A small roller is fitted to the lower part of the foot of the gate which, as the gate swings shut, strikes a half-circular piece of board fastened on to the surface of the ground, on which it revolves, and thus supports the weight of the gate. The gate therefore can not sag in the least; and if the heel-post leans slightly forward, or the upper hinge is slightly longer than the lower one, the gate swings to of itself. Such a gate as this should receive two coats of crude petroleum, which, if it is made of dressed chestnut or pine lumber, gives it a dark surface in which the grain appears very distinctly. We give an engraving of this gate as it appears when complete.



A GOOD FARM GATE.

How to Make a Rain-Gauge.

"S. P.," Medina Co., Texas, wishes to know how to make a rain-gauge. A rain-gauge is used to mark the amount of rain-fall. It is, therefore, only necessary to procure a proper receptacle to receive the rain, and another in which the rain gathered may be measured and preserved from loss by evaporation. The annexed engraving shows how one of a very simple character may be made. It consists of a glass jar with parallel sides and of a regular cylindrical form. A cork is cemented closely into the neck, and the side of the jar is marked with a file, so as to show inches, halves, quarters, or, preferably, inches and tenths of inches when possible to do so. A porcelain or metal funnel, the inner edge of which is exactly the same circumference as the inside of the jar, is fitted into the cork, and the joint sealed with cement so as to be air-tight. Although this gauge will not be exactly accurate, it will be so nearly correct that it will serve the purposes of an ordinary observer, and its construction and use will be found of interest to many of our readers, more especially to young ones of an inquiring disposition, who may learn by its use a habit of observing closely those things which are occurring hourly around them, but which are now often passed unnoticed. Nothing is more interesting than the study of the natural sciences, and the means and appliances for much of this study are, like this simple contrivance, readily procured and easily used. One thing, for instance, learned in a very short time by the use of such a rain-gauge and by observing the rain-fall, will be that the idea that drops of rain falling directly downwards are nearer together than when they fall in a sloping direction, forced into such direction by a strong breeze, is incorrect. On the contrary, it will be found that exactly as many drops will fall into the funnel when the rain falls in a slanting direction as when it falls directly downwards. The explanation of this fact, which to some seems improbable, we leave to our young readers to study out. The position of the rain-gauge should be such that the rain-fall is not interfered with by sheltering trees or eddies or irregular currents of wind. A clear, open space should be chosen, and the jar should be inclosed in a wooden box, leaving the funnel projecting above the cover.

RAIN-GAUGE.

Board Buildings.

The weight of material put into such farm buildings as stables, sheep-sheds, hog-pens, poultry houses, wagon sheds, or tool houses, is generally very much greater than necessary. Now that lumber is becoming more costly, and it is found that light, board buildings are equally serviceable as heavy-framed timber ones, the principle of balloon frames for farm buildings is becoming more commonly adopted, and they are becoming continually lighter. A few years ago the writer built a stable for cows and calves in which there was not a piece of timber thicker than one inch above the floors, excepting the stalls and stanchions. The sills were 8 × 10 the joists 2 × 10 the floors 2 inches thick, and the rest was all of inch or half-inch boards. The roof was of half-inch spruce boards eight inches wide, with the joints broken by four-inch strips

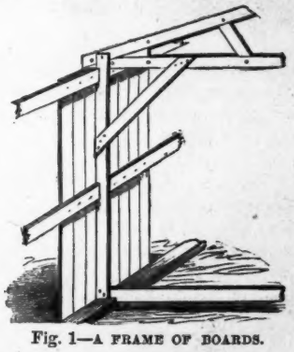


Fig. 1—A FRAME OF BOARDS.

of the same thickness. The roof was supported by trusses made of strips six inches wide put together as shown in figure 1, and were much lighter and easier to handle and put up than ordinary rafters, and having no tendency to spread, enabled the building below to be made very much lighter than would otherwise have been necessary. A board six inches wide (fig. 2) was nailed to the floor joist, and to that part of the end of the roof truss which came within the walls. This board was gained in order to receive strips which were used as girts, and the wall boards were nailed to these girts and to the first mentioned board, which stood at right angles to them. This stiffened

the building, and when the braces were put in it was as solid as a balloon frame, and was not any more shaken by a heavy wind than such a frame building. The roof was nine feet above ground with a pitch of four feet in eighteen. The building was sixteen by twenty-four, and for such a size or for much larger ones that may have cross partitions in them, this plan will be found very suitable. One man is able to do all the work alone, and handle any part of the material without help. The trusses are strong enough to hold a flooring over-head, but are not able to hold any great weight of hay or fodder unless strengthened from below by partitions or stanchions. For the purposes indicated in this article, this method will be found useful wherever wooden buildings are used. But this method of making the roof truss, figure 1, is equally well adapted to heavier buildings, and when heavy timbers or scantling are used. With a truss roof there is no possibility of its spreading, and the same strength is gained with lighter timber as when much heavier is used.

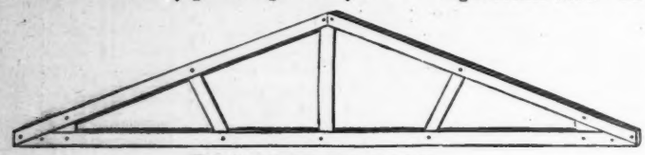


Fig. 2.—ROOF-TRUSS OF BOARDS.

Horizontal Wells.

A horizontal well is one dug into a hill-side in a direction very nearly level, so as to cut a spring of water and bring the flow out at the surface of the ground. In the engraving (fig. 3) the position of the well as to the surrounding ground is shown. It is readily seen that if a spring of water exists at the end of the well it may be reached just as readily by horizontal digging from the hill-side as by a vertical well sunk from the top of the hill. The water then flows from the well of itself, and no pumping is needed. The digging of one of these wells is cheaper than that of an ordinary well, inasmuch as no hoisting of earth is required, and it is done much more quickly. In use it is cheaper also, as once the spring is cut, the water flows of itself, and no pumping is required. The digging requires no more precaution than that of any other well.

Fig. 1.—CROSS SECTIONS AND PICK. Fig. 2.

The proper mode of proceeding is as follows:

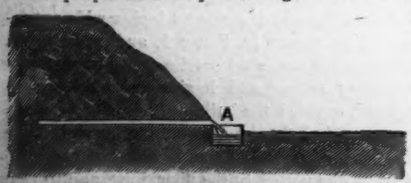


Fig. 3.—LONGITUDINAL SECTION.

When the spot is chosen, which should be done with reference to the convenience of location, as well as to the probability of procuring water, an opening is made as small as is possible for convenient working. The workman should be provided with leather pads over his knees, and work in a kneeling position. A short pick is used, such as is shown at figure 1, the handle of which is about 16 or 18 inches long, and the pick itself about 10 inches, to enable it to be used in a confined space. The earth is gathered into a small box mounted on sled-runners, and is drawn out by means of a rope by a boy at the mouth, and when empty is drawn back again by the man inside. As the earth is picked away sufficiently to put the cribbing in place, that is put up. The cribbing is of plank—hemlock is the best—two inches thick and six or eight inches wide. The shape of the well may be triangular, as in figure 1, or flat on the top, as in figure 2. The ends are fitted together as shown in the engraving; and as the planks are put in they are wedged tightly in place by wooden wedges or stones. This should be carefully done, as on it depends the permanence of the work. When the well is finished, a tight water-trough is laid in the bottom, with no more slope than is needed to cause the water to flow. This trough empties itself into a tank at the mouth of the well, and the overflow should be carried away by means of a drain and not be allowed to collect into a pool or quagmire; unless, indeed, it be utilized by collecting it into a tight-bottomed pool for use in dry seasons if the well should then fail. This kind of wells furnishes one method of procuring water for stock of which many might serviceably avail themselves.

Raising Pigs in the Eastern States.

A correspondent at Williamstown, Mass., writes: "Ever since a boy I have intended to go into pork-making as a business. All to whom I mentioned my purpose seemed to pity me; they think it is about the last thing a farmer can hope to prosper in. And now, after thinking the matter over for ten years or more, I feel like seeking yet more light and a broader and more intelligent discussion of the subject, before I embark in it. The question is, Can farmers make pork for a living here at the East, and hope to succeed as well as in other directions with similar appliances of brains, soil, and money? Of course I do not expect to fatten hogs here in Massachusetts as they do in Illinois or Missouri. My individual plan of feeding would be something as follows: Have the pigs come in March and sell them when 9 months old. Through the summer feed on green clover, cut and fed in troughs, mixed with corn-meal or fine feed or bran; and through the fall feed on mangels, top and root, crushed fine, and mixed with meal and wheat feeds in increased quantity. I have fed nothing to pigs that seemed to afford such satisfactory results, so far as the growth of the animal was concerned, as mangels. I wish you would give us your views on the matter in the *American Agriculturist*."

The subject is not one which can be fully discussed in a single article. But it may be said that it is rarely wise to embark largely in any new undertaking; and furthermore it is seldom desirable to keep only one kind of stock, and this is particularly true of pigs. A certain number can be kept very profitably on the food left by other animals, and on the waste of the farm, farm-yard, stables, dairy, house, etc.

Whether it will pay to "make pork" on food raised or bought on purpose for the pigs, depends very much *on what you can get for the pork*. If we could get 10 cents a lb. for choice fresh pork, as a minimum price, and from that up to 15 cents, or an average of 12½ cents per lb., there would be a reasonable prospect of getting a liberal compensation for our time and labor. We believe the time is not far distant when such prices will be readily obtained for choice fresh pork. At present, such pigs as we refer to are almost unknown in many markets. A small-boned, well-fattened, 4-months-old pig, of choice flavor, that will dress 45 to 60 lbs., is what is wanted—or at least would be wanted as soon as it was known. Even now, the miserable, large-boned, coarse, lean pigs that can be used to cut up for fresh pork, are in great demand, and sell at higher prices than large well-fattened hogs.

We like our correspondent's suggestion in regard to feeding green clover, run through a cutting-box, and fed in troughs mixed with meal, and we can bear testimony to the value of mangels. Still this plan of feeding will not enable us to raise and fatten pigs at *present prices*. When corn is worth only from 10 to 20 cents a bushel in the West, we can not hope to compete with Western farmers in fattening hogs designed for the pork-barrel, or for curing into hams and bacon. Our aim must be to raise pigs for fresh pork. If, as we believe, the price will advance to what this choice article is really worth, then we think our correspondent has a reasonable prospect of making money in breeding and fattening young pigs in the manner he proposes. And by so doing he would certainly add very materially to the fertility of the farm.

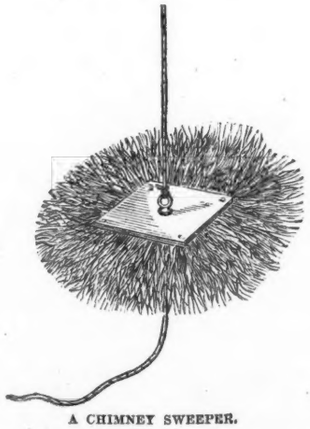
A Close Time for the Buffalo.

As the railroads penetrate into their country, the destruction of buffaloes becomes more wanton and wasteful every year. When the Kansas Pacific Railroad first went through to Denver it was thronged with herds numbering thousands of these animals, and the cars were sometimes compelled to stop to allow them to pass. Not less than a hundred thousand annually are killed on the line of this road. The Atchison, Topeka, and Santa Fè road penetrates the region further South, where buffaloes are found in immense herds during the winter. Dodge City, on this road, has been the principal point of shipment for hides and meat in Kansas the present season. The town is only about four months old, and derives nearly all its importance from this traffic. The road reached Dodge City September 23d, 1872, and from that time to the close of the year 43,029 buffalo hides were shipped and 71 car-loads of meat, amounting to 1,436,290 lbs. The buffaloes that are killed in wanton sport or for the supply of the wants of the settlers are not taken into this account. It is estimated that at least a hundred thousand of these animals will be slaughtered and shipped at this station the present season. And this is only one of the points where this destruction is going on. It is easy to see that the race can not long survive this indiscriminate slaughter, vast as is the region in which it pastures, and hardy and prolific as it is. If there are one million of buffaloes left upon the continent, their annual increase is only about 250,000, if we allow the same rate of increase as prevails among Texas cattle. The present rate of destruction is probably not less than 400,000 annually. However this estimate may be, there can be no doubt that we are every year making large inroads upon our stock of buffalo, and

within the present generation they will become so far reduced in numbers as to cease to be available for food to our pioneer settlers. This would be a national calamity. Now the frontiersman is mainly subsisted by the food which this animal furnishes, until he can get his quarter section under cultivation and begin to raise domestic cattle. It must put new obstacles in the way of the settler to have the buffalo exterminated. Congress has the power to stop this wholesale slaughter, and to give the buffalo some protection against its enemies. The animal is of most value in the winter, when the fur is in best condition, and the weather favors the transportation of the meat. The rest of the year, say seven months from the first of March, should be a close season in which no buffalo should be killed, and no fresh hides or meat allowed in the market. The penalties should be so heavy as to effectually break up the traffic. As the business is all carried on over a few railroads and the most of the buffaloes are slaughtered in the immediate vicinity of forts, it would not be a difficult thing for the Government to regulate this slaughter and to preserve the race until the great pasture grounds over which they roam are wanted for settlement. The cows drop their calves in spring and suckle them through the summer. It is essential to the preservation of the race that they should be left undisturbed by the hunter during this season. Our clubs for the preservation of game, our agricultural societies and papers, should press this matter upon the attention of Congress until the needed legislation is secured.

Sweeping Chimneys.

"J. B.," Onondaga Co., N. Y., asks how to get rid of soot in his chimney, where it accumulates and takes fire, endangering his buildings. As this is a very common trouble amongst farmers, who rarely sweep their chimneys and run serious risks of fire in consequence, we give an illustration of a very simple contrivance for removing the soot. Two pieces of board six inches square are provided. Holes are bored



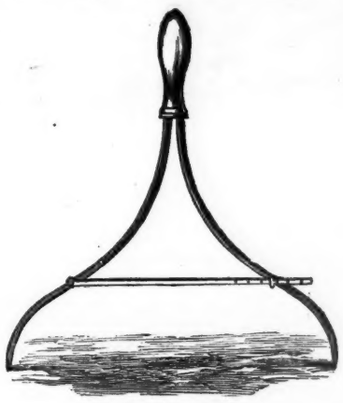
A CHIMNEY SWEEPER.

in the center, or screw-eyes are fitted, to which cords as long as the chimney are fastened. Holes are bored at each corner, to which common 2½-inch carriage-bolts are fitted. Birch or hemlock is placed between the boards, so as to form a sort of broom, and the nuts of the bolts are screwed tight. One person mounts the roof, and lets the end of one cord down to another person who stands at the bottom, and the brush is drawn up and down until the flue is cleared. A blanket should be hung over the fireplace if there is one, or a cloth over the hole in the flue if a stove-pipe is used. If the flue is crooked, a round stone fastened to the end of the cord will carry it down.

The soot is a very valuable fertilizer, more so than ashes, and is useful to protect young cabbage plants or turnips against the black flea, and on account of its pungent odor and taste is very obnoxious to many of the insect pests.

A Land Measurer.

An instrument for measuring land or laying out certain spaces in a field is shown on this



A LAND MEASURER.

page. It consists of a handle of wood of such a size as may be conveniently taken in one hand, into the bottom of which are affixed two curved bars of heavy wire or light iron rod. A cross bar is loosely riveted to the lower part of one of the curved bars, and holes are punched into the other end of it of the same size as a hole punched through the second curved bar. A small thumb screw or spring key passing through the holes keeps the curved bars or legs of the instrument stretched apart at the required distance. If it is required to measure a certain number of rods along a fence, the legs are set 4 feet and one and a half inches apart. Four of these spaces equal one rod. The instrument taken in the right hand is turned around as the person walks along in a straight line, and as the points of the legs touch the ground each one marks off a quarter of a rod. If drills or hills are wanted, the legs are set at whatever distance apart they are required, and the spaces may be set off as quickly as a person can walk.

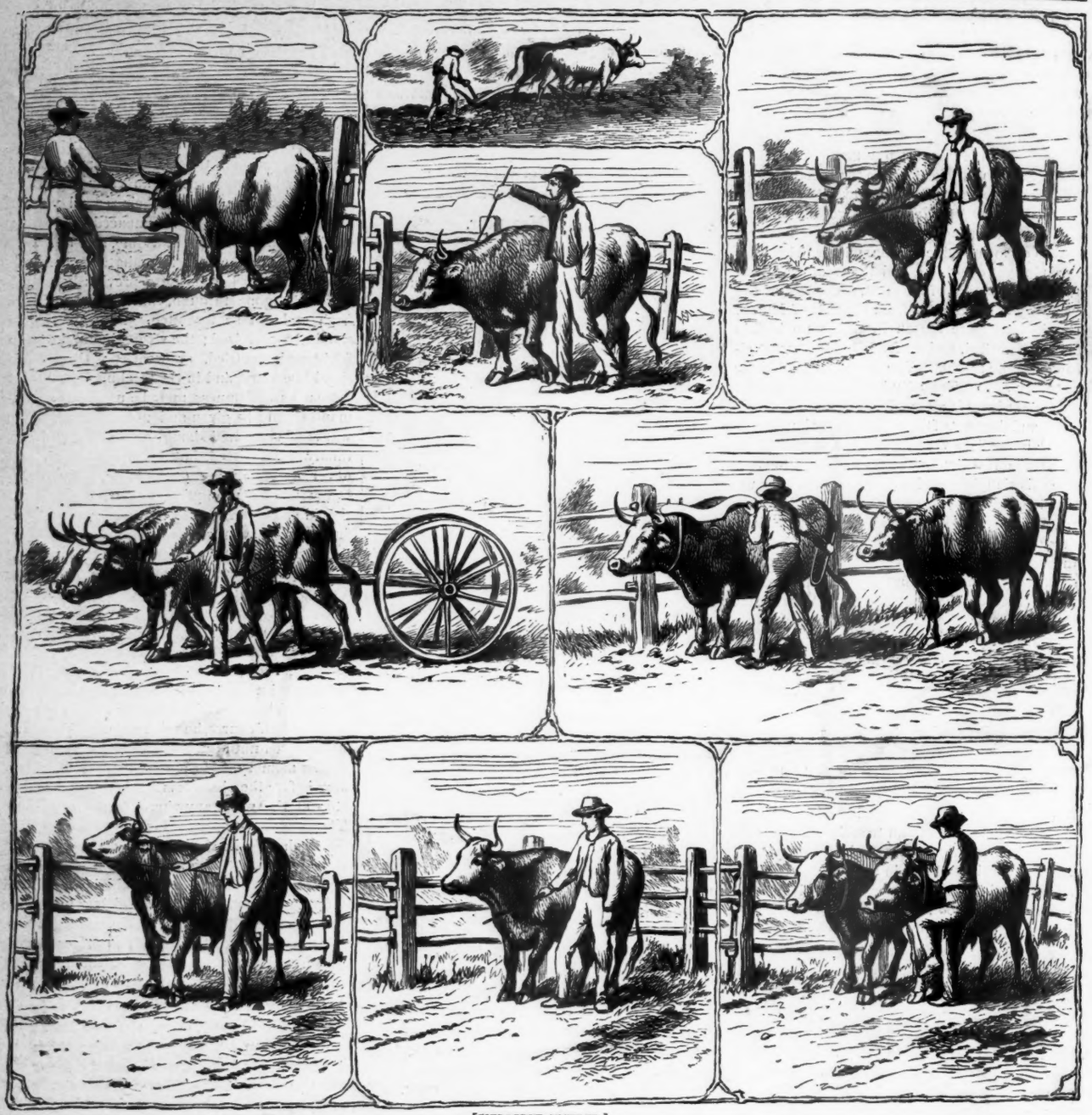
ANOTHER HORSE DISEASE.—From what we hear of the progress of another Canadian horse disease now very prevalent in Toronto, it would seem probable that we are to have another epizootic appear amongst our animals from that quarter. While the catarrhal fever which originated in that city last year is now passing out of our territory on the south into Mexico, a much more severe complaint, a deadly typhoid fever is beginning to cause apprehension across the water, and if it should prevail there, it would most likely sweep southward through the United States. Forewarned is forearmed, and as we have learned to dread these Canadian visitations it would only be wise to be prepared for them when they come. Our neighbors are not to blame for what springs from not very well understood causes, but we know that much may be done in the way of preparation and prevention. Our stock must be well looked after and kept in robust health, great attention must be paid to cleanliness, and taking all possible precautions we can then meet all possibilities with equanimity.

Training Steers.

The future conduct of a yoke of oxen very much depends on the training they receive. This should commence at an early period of their lives, at least during their second year if possible. It should be commenced gradually; one lesson being taught at a time, and that well learned before the next is undertaken. Afterwards, at every lesson, those previously taught should be gone through, that it may be kept fresh and not be forgotten. Great gentleness should be exercised; the steers should never be frightened, worried, or wearied; the lessons should be short, and in the teaching the greatest patience and firmness must be used. No command should be given and not enforced. The words of command should be sharply and distinctly pronounced, but in a low voice, and never with shouting or bawling. When any command is promptly obeyed, the animal should be encouraged by patting the neck, by a few gentle words which are soon understood, and by a reward, in the shape of a nubbin of corn, a piece of apple, a little sugar or salt, or a piece of bread and molasses.

The first lesson is to stop when "Whoa!" is said. To teach this, the steer (only one) should be driven alongside of a fence or barn wall up to another fence or wall or a wagon placed purposely, and when he reaches the impediment, the word, "Whoa!" should be spoken sharply but quietly. Of course, he must stop. This should be repeated until the word and action are fixed on the memory. He should then be taught to stop before the obstacle is reached, until he will stop at the word anywhere and everywhere. The second lesson is to Haw! or Come around! To teach this, he should be touched on the off shoulder or on the off side of the neck with the end of the whip, and this should be continued until he will come around the driver in a circle by the mere motion of the whip and the voice. The next lesson is to Gee! The driver should step in advance of the steer on the nigh side, and hold the whip at an acute angle with his nose, lightly touching him at the same time, and using the word "Gee." When the steer will gee round at the word while the driver stands behind him, and without being touched with the whip, and moved by the voice only until he faces the driver, this lesson is learned.

The next is to hold up the head. The butt of the whip should be pressed lightly beneath the chin, and the words "Hold up your head!" spoken distinctly. If the steer is slow in learning this, a smart tap beneath the chin, with the words spoken at the same time, will teach him what is wanted. Before this lesson is learned, he must be made to hold up his head as high as possible by the use of the words only. To Back is then to be learned. The steer must hold up his head, and then by a touch on the brisket, and the words, "Back! whoa-a-a—back!" he must be exercised until the word of command is sufficient without the touch of the whip. After these exercises are well taught to each singly, the steers should be exercised together a few times, and then yoked up. The yoke should be a light one, made for this express purpose. To yoke them up is the next lesson. The off steer is tied to a fence or wall, and the yoke fastened on to him. The nigh end of the yoke should then be held up with the left hand,



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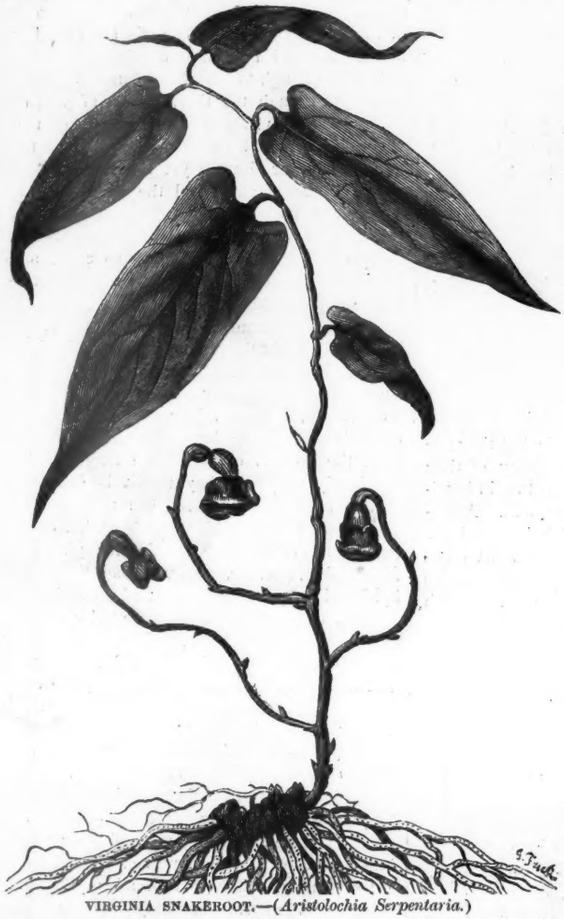
ILLUSTRATIONS OF THE METHODS OF TRAINING STEERS.—*Drawn by E. Forbes for the American Agriculturist.*

and the bow and bow-pin taken in the right hand. The steer, having been previously driven up to his mate, is then made to step up under the yoke, the words "Come under!" being spoken at the same moment that he is touched on the flank with a light switch or whip held in the hand along with the bow. When he is in place, the bow is put into the yoke, and held up with the left knee while it is secured with the bow-pin. The off steer is then untied, and the pair are left to stand in the yoke and move about for an hour or two, or while they are fed, after which they may be unyoked. They should never be left alone in the yoke until well used to it, lest they may get frightened, or learn to turn the yoke, a trick once learned they never forget or neglect to play when they can. After one or two yokings, they should be driven around the yard, and then, a short rope having been tied to the nigh steer's horns, they may be taken out to a field or on to the road, but for a very short distance at first. They should never be allowed to run away; if they do it once, they should be driven back to the place from whence they started, and be made to stay there a short time, and then be driven slowly home. This should be done without fail, whether it be noon or night, or they will learn to start off home when unhitched and when they are not wanted to, at whatever work they may be, or if they are at work a long distance from home; and much time be lost in consequence. They must be taught not to do anything until told to do it, and to do what they are told promptly. When they are perfect, they may be hitched on to a light ox-cart, or the front wheels of a wagon, the off ox being taught to step over the tongue, the words "Step over!" being spoken as he comes up to it, so that he may learn to step over anything else as may be needed at any time. The first few lessons with the cart or wagon should be long enough to tire the steers considerably, so that in coming home they will go steadily. In teaching them to back a wagon, they should be made to keep their heads up, and not allowed to hold them down, nor to stand out from the tongue. It is by being allowed to hold their heads down, and to stand out from the tongue in backing, that they learn to turn the yoke, which they will do when working with a chain, as in plowing or logging, and which when done not only makes it necessary to unyoke and reyoke them, but makes all concerned look and feel very ridiculous. The engraving given above represents the chief points of these lessons in such a manner as to make the directions very plain and easy to follow.

The Virginia Snakeroot.

In response to inquiries respecting native plants that have a commercial value, we last month gave a representation of Ginseng, and we now present one of the Virginia Snakeroot, a plant that furnishes a drug of considerable importance. Being one among the hundred, more or less, plants that had a reputation among the aborigines as a cure for snake-bites, its popular name is derived from this. A related European species is called Birthwort, it having in early times been used in child-birth, and the botanical name, *Aristolochia*, refers to the same thing. Our Virginia Snakeroot is *Aristolochia Serpentaria*, the specific name perpetuating its snake-bite reputation. We have three native species of *Aristolochia*, one of which, *A. Sipho*, is a useful and popular climber, and is cultivated as the Dutchman's Pipe, a name given to it on account of the shape of its flowers. In all the species the flowers are of a singular structure, being usually a tube bent upon itself, and much dilated towards the mouth. Some of the exotic species cultivated in greenhouses are notably grotesque as to their flowers. In the Virginia Snakeroot, the stems are about a foot high, with leaves of the general shape of those in the engraving, although they vary considerably in width and as to the form of the base. The flowers are very inconspicuous, and borne near the ground; the tube of the corolla is curved somewhat like the letter S, and is of a brownish purple color. The stems spring from a short root-stock, which is abundantly furnished with slender roots. The root has a remarkably aromatic, camphorous odor, and is used in medicine as a stimulant. The plant is found in rich woods in all but the northernmost portions of the country, but as a general thing only very sparingly. It is only along the Alleghanies, and in Ohio and some others of the Western States, that it occurs in sufficient abundance to be collected for sale. The collection of this or any other of our native medicinal plants does not offer any great inducements to those who have anything else to do. The wholesale price of Virginia Snakeroot in the New York market is about thirty-five cents per lb, and as it passes through several hands before it gets to market, it is probable that only a small portion of this is received by the collector.



VIRGINIA SNAKEROOT.—(*Aristolochia Serpentaria.*)

Our Native Orchis.

Although we have among our wild plants a large number belonging to the Orchis Family we have only one Orchis proper. The flowers in all of the plants of this family are so unlike most other flowers in their structure that it is difficult to describe them without elaborate drawings. Three parts to each calyx and corolla are present, but one or more parts of one or both series is so unlike the others as to give the flower a most irregular appearance. As the flowers present many grotesque forms, and are frequently, especially the exotic ones, of much delicacy or brilliancy of color, they are great favorites among florists, and some of the rare species are the most costly of all flowers. Our Northern species are all terrestrial, that is, growing with their roots in the ground like other plants, while the tropical ones often grow from the branches of living or the trunks of dead trees. Besides the peculiar form of the flowers the stamens (reduced usually to one) are united with the pistil, and the pollen, instead of being of separate grains, is usually in little masses which require the agency of an insect to take them from the cells which inclose them and bring them in contact with the stigma. The species figured, the Showy Orchis, *Orchis spectabilis* grows to about twice the size of the engraving, and is found in the Northern States in rich woods and damp places. Its two broad leaves are thick and shining, the upper portion of the flower is pink or purplish, and the lower petal or lip white. Like others of the family we have found this a very uncertain plant, it occurring in considerable numbers in a locality where the next year it is difficult to find a single specimen. The name Orchis is an ancient one applied by the Greeks to a similar plant.

SHOWY ORCHIS.—(*Orchis spectabilis.*)

Packing and Marketing Produce.

BY J. R. HELFRICH.

In the article upon marketing strawberries given last month there are hints which will apply to the fruit here treated of.

RASPBERRIES.

Use the same care in picking, packing, and shipping, as advised for strawberries. The berries should be perfectly dry when picked, otherwise they will mold; see that there are no soft or overripe berries put in, and that the cups or baskets are well filled so that they will be full when they arrive in market. For Blackcaps use round-top *pint* cups only—quarts are too

large, and the fruit in them will be mashed and injured in handling. For Antwerp and other Red varieties use cups holding *one third quart* only, as in any larger bulk the fruit will be sure to mash and be spoiled. They should be picked when the dew is off, and kept in the shade to thoroughly cool off before packing. Use ventilated crates and round top ventilated baskets or cups of the same style as for strawberries. Have each crate well marked on both ends, with a card containing the consignee's name in large showy letters; have also the shipper's name and station in full on both ends.

BLACKBERRIES.

Pick when the dew is off, and keep them in the shade to cool off before packing. Keep out all bruised and over-ripe berries, as one soft or mashed berry will soon ferment and spoil the whole crop. Use full pint or quart round-top cups that are well ventilated, also the ventilated crates, same as for strawberries. The 45 and 60 pint crates are the preferable sizes. If quarts are used 24 and 36 quart crates are most suitable; any larger or heavier package will be clumsy to handle, and liable to be injured in loading and unloading. Have each crate well carded on both ends as above directed.

WHORTLEBERRIES

Can be shipped in quart cups and berry crates, or in flat boxes holding one half bushel heaping measure. If shipped in flat boxes these should be made to hold a full half bushel. The proper dimensions are 4 inches deep, 13 inches wide, and 25 inches long (all inside measure), the ends $^3/_4$ inch thick, sides, top, and bottom of $^3/_8$ or $^1/_2$ inch thick of planed stuff—the whole neatly nailed together—except six inches wide on the top side across the width, which should be hinged to the box with leather and fastened by a screw. In filling the boxes they should be shaken and well filled so that there will be a full half bushel when they arrive in market. If the boxes are not well filled and shaken before starting the fruit will become loose and move in handling and is thereby apt to get mashed, which injures the sale very much. Mark with stencil on top "This side up," and never carry or haul them on the ends or sides, but always flat side down, otherwise they will come to market in bad condition. Have each crate or box marked as directed under raspberries.

CURRANTS

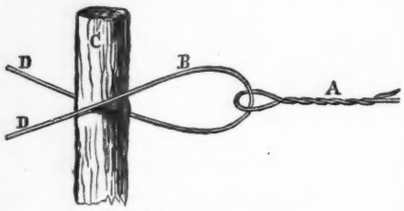
Must be picked when the dew is off and the fruit is dry. Handle carefully so as not to mash the fruit. Keep out all leaves. Do not let the fruit get over-ripe as it will not then bear transportation. If the market is near by, pack in flat boxes about five inches deep, holding about 25 lbs.; the lid should be hinged. Currants may also be sent in flat baskets holding about 20 pounds, covered with muslin. They must not be put in large bulk, as they are liable to get mashed and spoil. For cherry currants use flat baskets holding 15 to 20 pounds, or round-top quart cups such as are used for strawberries. Mark the gross, tare, and net weight, on the inside of each package; either with chalk or on a card that is tacked inside on the lid. Have each package well carded on both ends; if in baskets sew the cards on firmly to the cover.

MAPLE AND ELM TREES.—From the complaints that come to us that the seeds of these forest trees can not be had at the seed stores, it is evident that many do not understand their manner of growth. The Elm, the Red or Soft Maple, and the Silver Maple all perfect their seeds very early—not far from the first of June, and must be sown *the same season*. If kept for any great length of time after they fall they will not germinate at all, hence it is not practicable for the dealers to offer them. The sooner they are sown after they are ripe, the more certain they are to germinate.

A Simple Wire-Tightener.

BY J. SISLEY, LYONS, FRANCE.

A great many contrivances for tightening wires have been offered to the horticultural public. They are all more or less ingenious,



RAVET'S WIRE-TIGHTENER.

and answer the purpose required; but they are more or less expensive, and economy of time and money is the great desideratum in horticulture more than in any other pursuit. A gardener of our city, M. Ravet, has invented the most simple, most economical, and most effective mode of tightening wires. Upon the wire to be tightened he makes a ring, *A*, through which he passes another piece of wire, *B*, as in the figure, which passes around the post, *C*, to which the wire is to be fixed. With a pair of pincers he twists the two ends, *D*, of the piece of wire, *B*, until the wire, *A*, is sufficiently tightened. Nothing can be more simple, more easy, and more economical.

Vegetable Plants and Planting.

BY PETER HENDERSON.

One day about the middle of April the snow, not satisfied with its long acquaintance with us during the past winter, intruded itself again this spring, and covered our newly-planted gardens to the depth of several inches. Veteran tillers of the soil, as the most of us here are, could smile at this assault, knowing it to be harmless. But several of my correspondents, still young in the business, have written to me in great trepidation, thinking their planted crops were ruined.

A snow after planting in spring I have never known to injure plants of any kind, unless, indeed, it was heavy enough to break them. The fear of snow and of the slight frosts that come often prevents the setting of such plants as cabbage, lettuce, and even asparagus among vegetables, and of strawberries and other small fruits, until the season is so far advanced that hot weather comes on, starting the tops before the roots have had time to get a foothold. There is rarely danger that such hardy or half-hardy plants as we plant in spring will be injured by any frost that may come after. This opening up for spring work usually begins by the end of March here, and I have never yet seen plants injured by frost after that time.

To give an idea what amount of cold cabbage and lettuce plants will stand without injury, I will relate an experience I had in my early days of market-gardening. A particularly mild spell in the latter part of February had led us to believe that spring had come. Out went the teams, and the ground was manured, plowed, and planted with cabbage and lettuce to the extent of two acres, which was all finished up by the 26th of February. It was my second year in the business. I was yet an inexperienced hand, and my neighbors predicted that my venture was a foolhardy one, and would result in total loss, no one before having ever planted such crops in this section at such an early season. But fortune favored me; the weather continued mild long enough to allow the plants to "strike root," and though the thermometer afterwards marked as low as 15° above zero, and the ground was frozen for full ten days so that it could not be again dug or plowed, yet the wild venture proved a success, and I had the satisfaction of having the first cabbage from that February planting that was sold in market. I never after had an opportunity of planting so early, and would not do it if I had, for it was simply favorable conditions that saved the crop. If the cold snap had set in immediately after planting, there is but little doubt the plants would have suffered injury. But the experience was valuable in showing what severity of frost such plants would stand without injury. Of course, much depends on the condition of the plants; if taken from the hot-bed or cold-frame without being previously exposed, they might be in condition to be as easily injured as a tomato plant.

The past season I had the sashes taken off my entire crop of cabbage and lettuce plants on March first, (having, however, had them well hardened beforehand by ventilating), and never covered them again. They were twice covered completely up with snow, and the thermometer several times marked only 20° above zero. Yet we hardly ever before had finer plants.

The sashes so taken off—nearly 1,000 in number—were used for our flower business, but, had we desired it, they might have been used on temporary frames, and grown a crop of lettuce which in 5 weeks from date of planting, March 1st., would have easily given $3 per sash. I mention these facts to give confidence to the hundreds of your readers now engaged in market-gardening, who, from dread of exposing their plants in spring, not only do them an injury but lose the profit of a second use of their sashes. A third use of sashes may be had in growing tomato, sweet-potato, or egg-plants, *after* the crop of lettuce has been sold, or they may be used for forwarding an early crop of cucumbers or melons.

Notes from the Pines.

When one is doing the first week in May the work he usually does the first week in April, he finds matters crowding upon him at such a rate that he has little time to notice things, and still less in which to write about them. It is of no use to say that this is the most backward spring we ever knew, for those matter-of-fact people who keep records will come down with the figures and show that we have had several just such seasons within the past dozen years. Still no amount of figures or records can do away with the uncomfortable fact that we are all very much behindhand with our work. In looking about this spring I discovered to my dismay that a number of my dwarf apples and pears was infested with

HARRIS' BARK-LOUSE (*Aspidiotus Harrisii.*)—This is a very different affair from the Oyster-shell Bark-louse, the scale being oval and of a pure white color, while the eggs beneath the scale give a red stain when crushed. The tree

looks as if sprinkled with small drops of whitewash. The scale is of a much thinner texture than the other and the insect less injurious. I dissolved a lot of the Carbolic Plant Protector Soap and added it to some whitewash that was at hand, putting in some lamp-black to modify the color, and had the trees painted with the mixture. The whitewash was used as it would adhere longer and not be washed off by the spring rains as the soap alone would be. Two years ago some stray cattle came in and among other mischief broke off a fine young White Pine at about half its height. I disliked to lose the tree so I made a

New Leader by turning up one of the horizontal branches and tying it to a stake. The operation succeeded perfectly, and at a little distance one would not suppose that the tree had been mutilated. I had furnished spruces and firs with leaders in this manner but never before saw it done with a pine.

The Dwarf June-berry is a shrub that ought to be better known. Almost every one knows the common June-berry or Shad-flower, a shrub or small tree conspicuous all over the country in April and May, with its racemes of white, long-petalled flowers. One dwarf specimen that I have had for five years is only 18 inches high, while others in better soil are between two and three feet. They flower so profusely each spring that they are completely clothed in a sheet of white. The fruit, which is about the size of a large huckleberry, is said to be pleasant, and in some parts of the West is grown for market. I speak guardedly about the fruit, for the birds keep such a close watch of it that I do not get a chance to taste it when fully ripe. The shrub increases with moderate rapidity by suckers, and, were it desirable to cultivate it for its fruit, it could no doubt be propagated more rapidly. But without regard to its fruit, I set a high value upon it as an ornamental shrub. Last spring I set out a plant of the variegated leaved and single flowered

Japan Globe Flower, (*Kerria Japonica.*)—The double kind, sometimes called Corchorus, is a very common shrub, but the other I had never seen outside of a greenhouse. I supposed that it was, of course, tender, and last fall, as the plant had grown to be quite a large one, I took up a portion of it and put it in the cellar and left the rest to the mercies of the winter. This spring I found my supposed tender Kerria alive to the very tips of the smallest twigs, while the double one, usually accounted as hardy, had its stems killed back one half. I had a striking illustration of what a difference in the time of flowering is made by a slight

Difference in Exposure.—A bed about ten feet across cut in the lawn was planted with tulips and hyacinths. In spading manure into this, fall and spring, it has become raised, so that when the surface was rounded off the center was some eight inches higher than the circumference. The same kinds of bulbs were planted all around, and while the hyacinths upon the south and east portion are in full bloom, those upon the north side are just opening, there being between one and two weeks' difference caused by this slight elevation.

Grape-vines are injured even more than I first supposed. It is rather discouraging when one has his vineyard fairly established and expects to enjoy for the first time the full results of three or four years' careful training, to have to begin all over again. For the most part, the buds upon the arms are more or less injured, and in many cases killed altogether. There is nothing to do but to grow new canes from near the root. It is hardly safe to set down anything as "perfectly hardy." I supposed if anything could be classed in that category it was the

Judas Trees, but I find that with our native species, *Cercis Canadensis*, and the dwarf, *Cercis Japonica*, the flower-buds are all killed. It will hardly seem like spring without the cheery little flowers of the Judas trees. Of course every peach-bud shared the same fate. If the excessive cold of winter did much damage, it appears to have done some good.

The Cabbage Butterfly (*Pierus Rapæ*) seems to have about disappeared. I am not sure that the cold destroyed the chrysalides, though, being a foreigner, this is not unlikely. It may have been that the recently-discovered parasite became sufficiently numerous to hold the insect in check. At all events, I have seen but one butterfly, and that a solitary male, while last year the air over the hyacinth bed was thick with them; they are very fond of doing their courting among the flower-beds preparatory to a descent upon the cabbage-patch to deposit eggs for a crop of caterpillars. Whatever may be the reason, they thus far do not appear, and "for this relief, much thanks."

The Fertilization of Yuccas by Insects.

The agency of insects in effecting the contact of pollen with the stigma, and thus fertilizing the flower, has been frequently mentioned and illustrated in these pages. While most perfect flowers—those that contain stamens and pistils in the same flower—would seem to be arranged in such a manner that the pistil would be fertilized by the pollen of the same flower, a close inspection shows that the arrangement is usually the reverse of this, and that to prevent the injurious effects of too close breeding, the flower is really so contrived that it is with difficulty fertilized by its own abundant pollen, but must wait until that from another flower, and often from another plant, is brought to it. Much pollen is carried about by winds; but very important agents in this matter are the insects, which in going from flower to flower for sweets and pollen carry the fertilizing dust upon their bodies. Ever since the publication of Darwin's remarkable work upon the "Fertilization of

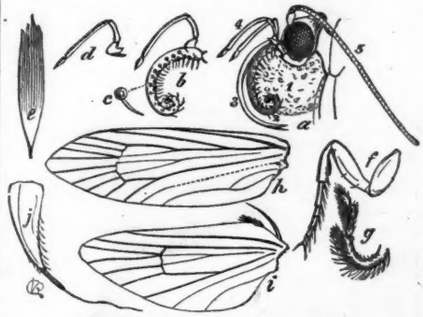


Fig. 1.—structure of pronuba.

Orchids," naturalists have been observing this matter very closely, and a most charming popular account of the present state of our knowledge of the relations of insects to plants in this respect is given in Dr. Gray's "How Plants Behave," a work which we commend to both old and young.

In the *Agriculturist* for December last we called attention to the interesting discovery, through the joint observations of Dr. George Engelmann and Prof. C. V. Riley, of St. Louis, Mo., that the common *Yucca filamentosa*—Adam's Needle, Bear's-grass, or Thready Yucca—was fruitful only when the pollen was placed in contact with the stigma by a small insect. In this case the fertilizing is not accomplished by an accidental transfer of pollen while the insect is searching food for itself, but is the result of careful preparation made by the insect for the welfare of its progeny. The insect,

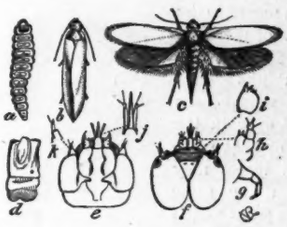


Fig. 2—larva and perfect insect, etc.

which is a small moth, collects the pollen into a mass, and places it in contact with the stigma or sensitive part of the pistil, a place it would not reach without some such aid. It then lays its eggs in the pollen, and the young soon after they hatch penetrate the tender pistil, and feed upon a portion of the growing seeds. By the time the seeds are ripe the grub or larva has attained its full growth, and eats its way out through the walls of the seed-vessel, enters the earth, and there takes on the chrysalis state. The next season the insect comes out as a perfect moth, ready to provide for the continuation of the species in the same manner as its parent did. Of course, those seeds upon which the grub feeds are worthless, but as the seeds in each capsule are many, and the larvæ few, only a small portion are thus injured. The insect here referred to had passed unnoticed until the observations of the gentlemen above-named; and at the meeting of the American Scientific Association, at Dubuque, last fall, Mr. Riley announced the facts of which we have given a brief synopsis, and stated that the insect which performed this interesting work was quite new to science, and that he had given to it the name of *Pronuba yuccasella*.

Mr. Riley, as our readers are aware, is the efficient State Entomologist of Missouri, and in his forthcoming fourth Report upon the injurious and other insects of that State, gives a detailed description of this new insect, with figures. Through his kindness we have the advance-sheets of the Report and copies of the engravings. As the technical description of the insect is much in detail, and can hardly interest the general reader, we omit it, referring the entomologists who would consult it to the Report itself.

Popularly, we may say that it is a small moth about half an inch in length, and with an expanse of wings of $^{9}/_{10}$ of an inch (figure 2, *c*). The front and hind wings are shown enlarged in *h* and *i*, figure 1. The front wings are silvery white, and the hinder ones semi-transparent and pale brownish. Head and thorax white, and the legs dingy yellow. One of the remarkable characters of this new genus is found in the maxillary palpi, which have in the female the nasal joint produced into a long "prehensible tentacle." The larva (figure 2, *a*) is about half an inch long, and white. The remaining figures show details of structure of the insect's head and other portions, which entomologists will

understand without descriptions, and which would scarcely be interesting to others.

Probably one reason why the insect has not been noticed before is that its color so closely resembles that of the Yucca flower that it may be readily overlooked. The insects appear to be most active at night, at which time, by the aid of a lantern, their operations may be watched.

With regard to the fruiting of the Yucca in Europe, Mr. Riley thinks the insect may have been carried over in the seeds, or that some related insect may perform the same office, a point which no doubt European observers will investigate. The principal observations in regard to this insect have been made upon the common *Yucca filamentosa* and *Y. angustifolia*. As there are several others in the South, and especially in the far West, it is hoped that some of our readers will take the trouble to watch them when in bloom, with a view to the action of insects, and report the result to Mr. Riley.

The Twin-flower—Linnæa.

Those at all familiar with plants are aware that many genera are named in honor of persons. This distinction should be bestowed exclusively upon those eminent in the science of botany; but, unfortunately, some botanists have had the bad taste to name genera after distinguished soldiers, politicians, and others who, however deserving they may be in other respects, have no claim to be botanically commemorated. Some of the most eminent botanists have had their names bestowed upon plants that in the general estimation are neither conspicuous nor beautiful. In the eye of the botanist, those qualities which make a flower popular are of secondary consideration. The name of Linnæus, the great master in Botany, is borne by a plant that, though humble in size, is one of great delicacy and beauty. It is a little creeping evergreen-vine, about twice as large as is represented in the engraving. It belongs to the Honeysuckle Family, and as each slender, upright stalk bears two flowers, it has received the common name of Twin-flower. The flowers are white, often tinged with pink or purple, delicately fragrant, and droop with a modest air that is very charming. It is found usually in moist woods, where it forms a dense carpet. It is an excellent plant for a shady rock-work, and when once established grows rapidly. In England, it is sometimes cultivated in pots of peaty earth. The plant was discovered by Linnæus in Lapland in 1732, and his friend Gronovius later gave it the name of the discoverer. In the well-known portrait of Linnæus he is represented in his traveling suit with a cluster of the Twin-flower in his hand. The Linnæa is a peculiarly northern plant, as its specific name, *borealis*, would indicate; and is found in both continents. With us it is very common northward, and is found sparingly as far south as New Jersey and Maryland. Aside from its intrinsic beauty, the plant is a favorite with all who love wild flowers, and more especially with botanists, who very properly regard it with great interest and affection on account of the illustrious name it bears.

THE TWIN-FLOWER.—(*Linnæa borealis.*)

THE SESSILE WAKE-ROBIN.

Wake-Robins—Trilliums.

The genus Trillium is a purely American one, with the exception of one species found in Japan, a country the flora of which bears a marked resemblance to that of our Atlantic States. There are about ten species, all of which are interesting, and some sufficiently showy to claim a place among the choice flowers of our borders. In December, 1871, we gave an engraving of *Trillium erectum*, which with the allied *T. grandiflorum* is gradually making its way into cultivation, and we now present an illustration of a quite distinct species, *T. sessile*. The Trilliums would not at first sight be placed in the Lily Family, as their general appearance is so unlike that of the Lily; yet the structure of the flowers is such that recent botanists have thus classed it. The genus gets its name from the Latin for *triple*, the parts of the plant being in threes; we have three leaves upon the stem, three parts to each calyx and corolla, twice three stamens, and the parts of the pistil in threes. They all have a tuber-like root stock from which arise a few simple stems about a foot high, each bearing three broad leaves, and above these the flower, which is either elevated above the leaves, upon a stem, or sessile close among them, as in the case of the one here figured. The flower, shown of the natural size, is a dark purple or maroon color, but the great beauty of the plant lies in the leaves, which are finely variegated or marbled with a very pale and a dark green, and when perfect equal in richness some of the choice exotic "foliage plants" of the greenhouses. This species is found from Pennsylvania and Wisconsin, southward; and in South Carolina and Florida there is a closely allied species, *T. discolor*, which has still more strongly marked leaves, but otherwise very near this one. The *Trilliums* will grow in any good garden soil that will not become too dry in summer, and when they become well established, a process requiring a year or two, take care of themselves and unfold their flowers each spring. Those who can readily find these plants in their native localities will be amply repaid for the trouble of removing them to the garden. It is rarely that we see Trilliums offered by our florists, and one who wishes to purchase them, as well as many other American plants, will have to send to Europe for them. The species we have here enumerated are the showiest, but all are pleasing.

THE HOUSEHOLD.

☞ (*For other Household Items, see "Basket" pages.*)

How we Bake our Bread.

All civilized peoples use the flour of some kind of grain mixed with water, fermented, and baked into bread. It is only the savage that plants a tree and grows his bread in the form of bread-fruit. A history of bread from the earliest times and in all countries would be a most interesting one. In our country, we understand by bread, when mentioned without any qualifying word, the flour of wheat made light by yeast or leaven, and baked. There are localities where abominations made with soda and saleratus are made to do service instead of bread; but as intelligence and a better knowledge of the laws of health make their way, these unsavory, unsightly, and malodorous compounds disappear. The introduction of ranges and stoves have made the baking for the most part pretty much the same thing all over the country. Still, there are some places where stoves are not known, and where the primitive modes of our ancestors are still followed. One of our artists, some months ago, made an extended sketching tour, and among other things his pencil jotted down were several domestic scenes which illustrated what seemed to him odd ways of baking. Our Household Department is so limited as to space, that we seldom find room for pictures other than the simplest illustrations; so, by the way of variety, we give engravings from three of the sketches referred to, as they may have the interest of novelty to at least some of our younger housekeepers. The sketch for figure 1 was taken in one of the southernmost States, where the bread is baked before the fire by the aid of a tin reflector. To see a kitchen scene like that in figure 2 one must go to some of the country towns of New England or to the wooded parts of the West, where the open wood-fire has not been replaced by the stove. Here we have a primitive but most useful utensil, variously known as bake-pan, bake-kettle, or skillet, which is the *braisier* of the French. It is a shallow iron kettle upon legs, with a cover which has a turned-up rim around it. This, containing the bread, is placed over live coals drawn out upon the hearth, more live coals are placed upon the lid, and in skillful hands the baking, not only of bread, but of other things, is done to perfection. Figure 3 gives the detached oven that is a more common adjunct to the farm-house in the Middle States than elsewhere. A large stone, brick, or in some places even clay oven is put up handy to the kitchen, and is capacious enough to hold the week's baking. The heating of the oven, the sweeping out of the coals, the putting in of the bread, pies, cake, and other matters, and the "drawing" at the proper time, call for a skill that can only be acquired by long practice.

Fig. 1.—BAKING BEFORE THE FIRE.

Fig. 2.—BAKING IN A BAKE-KETTLE.

Fig. 3.—THE DETACHED OVEN.

Home Topics.

BY FAITH ROCHESTER.

REWARDS AND PUNISHMENTS.—It would be far too much to expect average children to do right simply for the sake of well-doing. Their best endeavors are generally prompted by the hope (often unconscious) of some reward. The wise parent gives this reward—just a smile of pleasure, or a kiss, or a cordial "thank you"—when well-doing takes the form of a personal favor. "That is right, dear," is easily said when a child has made an effort to do well, and it helps the little one a great deal.

"A child ought not to be praised for simply doing right," says one.

Then do not blame it for doing wrong. But praise is not what we are talking about, if by praise you mean anything like flattery. We only call things by their right names if we say "that is right" when a deed *is* right; and there is no flattery in letting a child see that we are pleased with it when it has merited our pleasure. All this is simple encouragement, and the world would get on poorly without it. We grown-up people can not thrive without encouragement of some kind. Most of us are toiling for rewards—one for fame, one for wealth, one for social position, one for the love of his fellows—each according to our taste. Or, if deprived of hope, we are perhaps whipped to our tasks by fear of punishment, fear of disgrace, fear of poverty, fear of social ostracism, fear of alienating our friends. Duty is the sole mistress of some, but she also governs by hope and fear, high or low, according to the degree of culture, through the conscience. The very few who seem to do what is right spontaneously are rare among our growing boys and girls, and we must expect to bring them to their daily tasks by some motive stimulated.

It is not well to offer children cash payment very

freely, mercenary motives are so easily cultivated. Indeed, *promises* of all kinds should be avoided as much as possible, especially evil promises or threats. Perhaps I can explain myself best by an illustration.

A mother thought it was time to teach her little boy of six to wipe dishes. She told him he might help her by wiping the dishes if he would like to, and the *honor* delighted him very much. His hands were carefully washed, and an apron was tied around his neck. Then the dishes, washed and rinsed in hot water, were turned to drain in a pan, and the boy set to work with his cloth. He was so proud he had to carry each dish where some one could see him wipe it. For a day or two he was very slow about the work, but very thorough in his wiping. Hurrying him seemed to avail little, and was likely to discourage him; so the mother proposed to see which would get through with their part first, she with washing all of the dishes, pans, kettles, etc., and scouring the knives, and he with just wiping the crockery and spoons and forks; and after a few times trying the mother could hardly get a chance to "beat." This was lively and happy work. Soon a younger child wanted the honor of wiping the spoons and forks, and all the wiping part was left until the washing was done. Then each child, after performing its ablutions, had its pan, one with the crockery and knives and brighter part of the tin-ware, the other with forks and spoons. But the chatter-boxes learned to dawdle over their work. They liked the business, but carried a good deal of play along with it. There was no particular hurry about the work, but the habit was a bad one. So the mother said that if they finished their tasks in ten minutes she would give each of them a card with a picture of an animal on it after the dinner dishes were wiped—this as a reward for promptness with both breakfast and dinner dishes. They did the work easily in from five to seven minutes, and then the limit was fixed at eight minutes. When the cards were all gone, a still better reward for quick work was devised. The globe was brought out as soon as the dinner dishes were *promptly* wiped, and a chapter in "Lucy's Wonderful Globe" was read to the little ones. After the book was read through, the globe alone was sufficient reward. Some time I must tell of the rapid progress made in geography during those half-hours with the globe.

The children were not paid for doing the work. They loved to do that just "to help mamma." But the temptation to chatter and play and neglect the work was so strong that some inducement seemed necessary to make them work fast.

Whatever I might have said about punishments must now go unsaid. I was happily interrupted in my writing by the arrival of a new book. Its very first chapter is about "Corporal Punishment," and from it I will quote:

"If it were possible in any way to get a statistical summing-up and a tangible presentation of the amount of physical pain inflicted by parents on children under the age of twelve years, the most callous-hearted would be surprised and shocked. If it were possible to add to this estimate an accurate and scientific demonstration of the extent to which such pain, by weakening the nervous system and exhausting its capacity to resist disease, diminishes children's chances for life, the world would stand aghast. . . . How many a loving mother will, without any thought of cruelty, inflict half-a-dozen quick blows upon the little hand of her child, when she could no more take a pin and make the same number of thrusts into the tender flesh than she could bind her baby on the rack. Yet the pin-thrusts would hurt far less, and would probably make a deeper impression on the child's mind."

The author of this best of home books does not simply condemn the old and barbarous methods of "discipline." She points out clearly a decidedly better way in many an excellent chapter; and she is able to say, "I know, for I have seen," and "I am sure, for I have tested it." There is not room here to quote further; but let every parent who sincerely desires to walk humbly, and deal justly, and love mercy *as a parent*, get this little book and ponder it well. It is called

"BITS OF TALK ABOUT HOME MATTERS, BY H. H."—This is indeed, according to my belief, the best of all home books yet written. It is the book which a mother should keep in constant sight so long as she has the care of young children. Let the recipe books go, and all the books about decorating our houses and persons if they must. We can eat simple baked potatoes and gems and apples if necessary, and live on bare floors, clad in calico, if need be, but henceforth we *must* give time, and thought, and companionship, and love unbounded to the little children whose plastic souls have been intrusted to our guardianship.

Many tears will fall upon the pages of "Bits of Talk," for it has come too late for many an honest-hearted but sadly-mistaken parent. If we could only have been brought up on such doctrine! I, for one, am glad that this book "about Home Matters" is not at all about mere housekeeping.

SPRING VEGETABLES.—Parsnips and salsify will, with most persons, be gone when this paper is printed. Asparagus, too, will almost have had its day. I have seen it very poorly cooked on very elegant tables—boiled in long stalks, half of which were white and tough. It is much the best way, it seems to me, to cut it in small pieces, cooking only the tender part, and pour boiling water over it, and boil it half an hour, adding a little cream and salt when it is done, and letting all boil up together once. Pour it over nice toast if you like.

GREEN PEAS will soon be here. Cook them as soon after picking as possible. Marion Harland says "shell and lay them in cold water until they are ready for cooking." I say never wet them until you cook them if you can avoid it. To secure this, shell them as clean as possible. Pour boiling water over them, and boil half an hour, or a little less if they are very tender. Do not salt them until they are soft, and then but lightly, their own flavor is so delicious. Add a little cream or milk if you have it, but never add any butter except the very best, and not that if you have cream.

PIE-PLANT PIES.—These are very delicious if well made. But I can tell you that if a memory of your mother's (or my mother's) excellent pie-plant pies drives you to purchase one in a city bakery, you will probably be sadly disappointed. They stew their pie-plant before making the pies, and that spoils them. Our mother never did so. She peeled her stems of rhubarb, and then sliced them in half-inch lengths, holding several stems in her hand at one time. With these she filled her pie, sweetened it generously—about the same as for a lemon-pie, a small teacupful of sugar for a medium-sized pie—moistened it with a great spoonful of water, dusted over this a little dry flour (to thicken the juice a little), covered it with the upper crust, and baked it slowly and thoroughly. Such a pie is too rich for some stomachs, and there is a way of dispensing with a part of the sugar without having the pie too sour. Not by the use of soda! No, indeed! But you can pour boiling water over your sliced rhubarb, letting it stand ten or fifteen minutes. Pour this off, and make your pies of the rhubarb with less sugar.

If you stew pie-plant for sauce, you can pour off a part of the juice before it is done (using it to make jelly if you like), and supply its place with more water, so economizing with sugar.

What to Do with Bleeding Wounds.

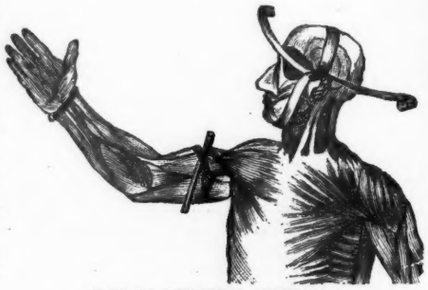
BY DR. J. T. ROTHROCK.

As this portion of Dr. Rothrock's article refers to wounds of the arm, we, for convenience of reference, reproduce the engraving used last month.

Suppose a friend or neighbor is bleeding freely from a cut in the arm-pit. The blood flows in free jets, and there is no time to be lost. Run your finger along the collar-bone, which you know extends from the breast-bone out almost to the prominent part of the shoulder. Having found this bone, take your fingers or a door-key, and with the ring end of the latter press *down* hard just back of and above the middle of the collar-bone and you will force the artery against the upper part of the first rib, and so close its cavity "until the doctor comes." If you wrap the end of the key with two or three thicknesses of muslin, or with your pocket-handkerchief, it will be just as efficient, and bruise the flesh somewhat less.

Suppose the injury to be below the middle of the arm and above the elbow, and that blood is spouting freely from the cut; now here it happens that any one can stop its flow. If you bend the arm so that the hand rests upon the shoulder you bring out in bold relief the muscle, to the development of which our college gymnasts and prize-fighters bestow so much attention. It is a monstrous knot of flesh which serves many important purposes in life, besides being a guide to the position of the main artery of the arm. Straighten out the arm again, for you have found in its flexed condition where the inner margin of this muscle is. Tie a knot (or two of them if need be, to get a solid lump of good size) in a handkerchief, put that knot above the injury and on the inner edge of the muscle, and tie the handkerchief loosely around the arm. Then pass a stick of three fourths of an inch in diameter and a foot long under the handkerchief, and twist it until the knot presses hard upon the artery. The band on the extended right arm of the figure shows more plainly than words how readily it may all be done.

If the cut is below the elbow, and the blood



HOW TO COMPRESS ARTERIES.

coming in jets from the wound, the same appliance would still answer, or it might be put on with the knot in the hollow of the elbow in front.

The large artery of the arm divides (or, in the language of anatomy, *bifurcates*) below the elbow, one branch going to the outer and the other to the inner side of the forearm. Both of these branches, however, are rather deeply seated, and may, especially in fleshy persons, be difficult to compress by an encircling band below the elbow. Hence, if we fail to arrest arterial bleeding in the forearm by the pressure immediately above it, we may with certainty depend on stopping it when we put the handkerchief on as directed for bleeding of the arm—*i. e.*, above the elbow.

Those who do not yet know how to find and feel the pulse should at once learn. Suppose you have a cut at the junction of the wrist and hand, or even as low down as in the palm of the hand, with, what what often happens there, brisk bleeding; the strong gripe of a vigorous man around the wrist above the bleeding will usually stop it. Try your own pulses, and see how readily you can so control the beating by moderately firm pressure with the finger. It is no more difficult to do this if there is a cut below.

The arteries which resulted from division of the main artery of the arm, and ran down, one on the outer and the other on the inner side of the forearm, again unite in the palm of the hand, forming what are called the "palmar arches." Hence, to stop bleeding at a point near their reunion it is not sufficient to compress one only of the parent trunks. Both must be constricted by the bandage, else the flow will continue from the one which is cut, or if that be compressed it will appear through one of the "inosculating" branches of the other, at the further end of the cut vessel.

(TO BE CONTINUED.)

BOYS & GIRLS' COLUMNS.

Hunting the Hare.

Farmers' boys as a general thing have fewer opportunities for fun than city boys, and yet they have many chances that city boys do not have for amusing themselves. We never saw a lot of farmers' boys having a game of base ball on a smooth meadow, although we have often seen them swinging the scythe or driving the mower or rake over it. And yet why should they not enjoy this and other games on Saturday afternoons or other occasional holidays? "All work and no play makes Jack a dull boy." Farmers' boys, as a rule, do a good share of work, and need now and then to polish off their dullness with a good frolic. Now we have a splendid game for farmers' boys which will furnish them a great deal of sport at any season of the year except the depth of winter. It is a hare hunt. Not one of those after a four-legged hare, with dogs and guns, which always made us feel sorry for the poor little helpless, harmless, creature, run to death by savage dogs, but one after a two-legged hare by two-legged hunters. A dozen or more of boys may join in the game, with one of the smartest boys to act as the hare. The hare has a satchel fastened around his shoulders filled with small pieces of paper about an inch or two square, made of newspaper. He starts off across the country over fences, across roads and creeks, through fields and woods, having a start of say 5 or 10 minutes, dropping here and there a piece of paper. This is the scent which the rest who hunt him have to follow. When the hare has got a sufficient start, the chief hunter gives a signal halloo and the pack start on the scent. The hare will keep out of sight as much as he can, doubling on his scent, throwing the dogs off as much as possible in every way; sometimes, when he has a chance, he turns back on his trail and springing to one side and hiding in the brush or behind a fence or a log or in the edge of a cornfield, until the dogs have passed him, he starts off in a new direction, which they have to come back and discover when they find the scent is lost. When the pieces of paper are all used up a whole newspaper is laid on the ground and a stone placed upon it. This is to show that the run is up and the hare has turned home. Then the nearest way home is taken, and if the hare can be caught before reaching home, the one who catches him is the hare on the next run. In this game there is a splendid chance for fun of the most exciting kind. The dogs spread out so that one or more is sure to keep sight of the "scent," and in calling to each other as they should do, that they are on the scent, they make noise enough to enliven the neighborhood all around. When the scent is lost there is a sudden silence for a time until it is struck again, when the hallooing begins once more and all the pack are as noisy as ever. In fact there is as much sport over such a hunt as there ever was over a real hunt with a pack of hounds, and a score or half a hundred of mounted huntsmen after a frightened hare or fox anxious to save its skin, and up to all the dodges which these hunted animals know so well, and which often help them to escape the dreaded dogs.

There should be a weekly meet during the season at some appointed place, to which all should return when the hunt is up, and the master of the hunt should announce the place and time of the next week's meet. If the hare is caught sight of during the hunt there is no longer any need to follow the scent, but he may be run down as quickly as possible unless he can get away, when the scent must be taken up again.

Aunt Sue's Puzzle-Box.

TRANSPOSITIONS.

(Fill the blanks with the italicized words transposed.)

1. I was surprised to hear that *Squire Magdan* went ——.
2. Don't examine that —— there is a *secret in it.*
3. Before we go boating is it —— that *Ida can steer?*
4. If you are so —— to come here and *rest, step in.*
5. *M. Carmen's beer* suggested unpleasant ——.
6. I found pleasant —— in the *Hoppic Mansion.*

CROSS-WORD.

My first is in bracelet but not in ring.
My next is in summer but not in spring.
My third is in night but not in day.
My fourth is in August but not in May.
My fifth is in pistol but not in gun.
My sixth is in hundred but not in one.
My seventh's in raven but not in crow.
My whole is a name you all well know.

FRANKLIN W. H.

SQUARE WORDS.

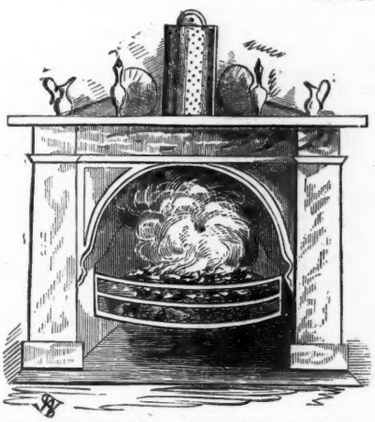
1.—Square the word "O C E A N."

2.—1. Scanty. 2. A journal. 3. A fruit. 4. A memorial. 5. Perpendicular.

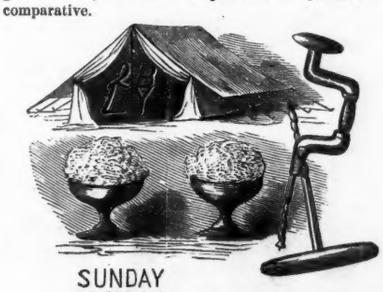
NUMERICAL ENIGMA.

I am composed of 6 letters:
My 1, 2, 3, 4, 5 is a part of every one.
My 2, 3, 4, 5, 6 is all the world to you and me.
My 2, 3, 4 is strongly attached to you.
My 1, 2, 3, 5 is of a melting disposition.
My 1, 3, 5 is elevated above the crown.
My 5, 2, 3, 4 is a small body of salt water.
My 1, 3, 4, 5 though often *abounding* in the country, is always *dear* in the city.
My 4, 3, 5 though often preying, never prays, nor deserves praise. (AUNT SUE does not quite agree with this last sentiment, having—herself—ejaculated, admiringly—"What a clever creature!")
My whole is the sole support of many an orphan.

E. S. B.



435. *Illustrated Rebus.*—We have lots of rebuses on hand from Aunt Sue's correspondents, and it is not her fault that they do not go in. Those who have sent their rebuses to Aunt Sue must not blame her, but if blame belongs anywhere, it is to the editors that it must be given.—Well, here is a simple case of positive and comparative.



436. *Illustrated Rebus.*—This is not quite so easy as the other. Let us see who will make it out first.

PI.

Od toun resoth sa ouy odwul vaeh rothes od notu uoy.

JES.

ALPHABETICAL ARITHMETIC.

ODL)EFNOI(OLF
DIN

SHO
FOS

GFLI
GFHG

LF

DOUBLE ACROSTIC.

The initials and the finals each name a quadruped.

1. A bird.
2. A fish.
3. A reptile.
4. A quadruped.

ADOLPH M. NAGEL.

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

PATCHES, CUTTINGS, AND FRAGMENTS.

1. Mick, Nick, Dick. 2. Pat, Mat, Wat, Nat. 3. Sal, Hal, Cal. 4. None, one. 5. Lamb, La.

ARITHMOREMS.—1. Phthisic. 2. Cynic. 3. Kine. 4. Elevate. 5. Immix. 6. Vex.

WORDS ENIGMATICALLY EXPRESSED.—1. Kindred. 2. Equipage. 3. Tendons. 4. Farthing. 5. Parapet. 6. Something.

CHARADE.—Madam.

PI.—What is resolved once for all, should be long considered.

CROSS-WORD.—Spring.

NUMERICAL ENIGMA.—Providence.

ALPHABETICAL ARITHMETIC.

218)6908856(31692
(*Key.* My pet scarf.)

PUZZLE.— Sword, word, rod, O!

SQUARE WORD.—
E X P O S E
X E R X E S
P R O B E S
O X B A K E
S E E K E R
E S S E R A

ILLUSTRATED REBUS, No. 434.—Potato. Coxcomb. Love lies bleeding. Phlox. Box. Monkey flower. Cypress.

AUNT SUE'S NOTICES TO CORRESPONDENTS.

I would respectfully suggest to my young friends, that I have more "Cross Words" and "Numerical Enigmas" on hand than I can use in twelve months.

F. W. B. We "charge" nothing for printing enigmatical contributions, and only give prizes for special puzzles.

T. G. C. Your puzzle looks more like a shanty struck by lightning than like a fair word. But you say it is "O U T,"—well I will leave it "out." Thanks, all the same.

Thanks for puzzles, letters, etc., to J. L. Howard, Kittie, M. Sharpe, H. K. M., J. Rettew, Robt. W. M., O. A. Gage, Frank, J. H. Craig, Hubert N. R., Mary A. H., H. L. B., E. S. M., F. W. B., W. P. & E. H. A., Edwin E. P., Lizzie M., Edmund H., Kittie M. E., E. M. Welles, V. S. Peet, and Willie Masters.

AUNT SUE'S address is *Box* 111, *P. O., Brooklyn, N. Y.*

Some Curious Sea Animals.

Last month I told you about some quadrupeds that live in the sea; now I shall ask you to look at some very curious forms of animal life that are found in the sea, and nowhere else. Only a small portion of my readers live upon the sea-shore, and I doubt if many of these ever saw any animals like those I am going to tell you about, as they are for the most part found well out to sea and in southern waters. Still, we ought to be interested in everything that has life, as every animal, even the most obscure, forms a part of one great chain of which we have good authority for the belief that we are the head. Probably very few of you ever saw a Medusa, or Jelly-fish or Sea-nettle as it is variously called. I give an engraving of one which will give a general idea of the whole. Some are so small, that thousands can find sea-room in a wine-glass; others are as large as a bullet; others, again, a foot across; and we have accounts of some so large that they were estimated to weigh several tons. Formerly, they were not regarded as animals, but were looked upon as mere masses of jelly; but a more careful examination has shown them to be animals, and very curious ones, too. The engraving will give an idea of their general form. There is a mushroom-like body, from the underside of which are bodies hanging down that are called *tentacles;* these vary in length, from a few inches to several feet, and the animal has the power of extending or withdrawing these very rapidly. The jelly-like body shows that it is made up of divisions attached to a common center, and on this account these animals are called *radiates.* They have organs which serve for eyes, mouth, and stomach, and the long tentacles are useful in seizing their food. The Medusas are often beautifully colored, and have the edge of the mushroom-like body bordered by a handsome fringe. In a calm day they present a charming appearance, and I have passed hours on the Gulf of Mexico in watching these singular Jelly-fish as they floated by the vessel. I, however, made a closer acquaintance with them when I went to take a sea-bath. As I was enjoying the roll of the surf, I felt something flabby strike my back, and then a most annoying burning and prickling. Upon examining the cause, I soon found it was the Jelly-fish, and was quite willing to admit that it had a good right also to the name of Sea-nettle. These animals are so largely made up of water, that when they are thrown upon the beach the hot sun soon causes them to disappear, and there is nothing perceptible left of them. Yet this mass of jelly has its appetites and the ability to procure its food, and is able to capture and feed upon much stronger animals, such as the fishes proper, crabs, and other marine animals. It is not provided with weapons for a regular fight, but it has wonderful power of holding on, and when its numerous flexible arms or tentacles get hold of another and stronger

animal it just holds on patiently until its victim is tired out. Among the curious things about these Jelly-fish is the way in which they multiply. In their youngest state they possess the power of motion, and after a while they become attached to a stone or other object and become fixed. Now a strange thing takes place; the young Jelly-fish grows into a body that looks like a number of saucers placed one upon another in a pile. These little saucers keep on growing, until at last the upper one breaks away from the pile, turns over, and swims away from the rest a regular Jelly-fish. After a while, the next saucer-like body goes through with the same performance, until each one of the pile of a dozen or more saucers has in its turn grown to the proper size and started off in an independent life. Some of the minute Jelly-fish give off light in the dark, and it is by these that the phosphorescence of the sea that you have read about is caused.

A MEDUSA OR JELLY-FISH.

Another strange thing often met with at sea in pleasant weather, is the "Portuguese Man-of-War," also called the Sea-bladder and Little Galley. The upper portion, which looks much like a blown-up bladder, is filled with air, and has a handsome crest. It is colored blue and purple, and the crest often has a tinge of carmine, so you may imagine the "Man-of-War" is a very pretty object as it floats upon the sea and is wafted along. It is not, however, like the Medusa, a single animal, but a curious compound animal made up of several united individuals. These are seen below the floating portion, and they possess the power of throwing out threads many feet in length. Though so beautiful in appearance, one must beware how he touches this "Man-of-War," as it possesses the power of stinging in a most painful manner. It throws its slender arms around one, and at the same time gives off a fluid that produces the most painful irritation. There are several accounts of persons who have come in contact with these while bathing and found great difficulty in reaching the shore.

THE DOCTOR.

PORTUGUESE MAN-OF-WAR.

THE BRIDGE OF SAFETY.—*Drawn and Engraved for the American Agriculturist.*

No doubt these youngsters have been out on some skylarking expedition, and have been caught in a scrape. Perhaps they made a raid upon the melon-patch or the orchard of some farmer who started in pursuit. Of course they ran—people who feel that they are guilty always run—but if the farmer was slow of foot, his dog was not, and the urchins had hard work to keep ahead of him. They knew that if they were once across the brook they would be safe—but the water was high, and the holes were deep, and wading was out of the question. Persons in danger have their wits finely sharpened and think very quickly, and it occurred to the foremost boy to bridge the stream by means of a young birch that grew upon its borders. Climbing up into the slender, waving top of the tree, his weight threw it across the stream, and landed him safely on the other side, where he held the bridge in place until the others could cross in the manner that you see in the picture. It is wise to take a good idea from a bad boy, and the bridge built in a hurry by these young rogues to escape pursuit may serve as a hint to others who see no other means of crossing a deep stream.

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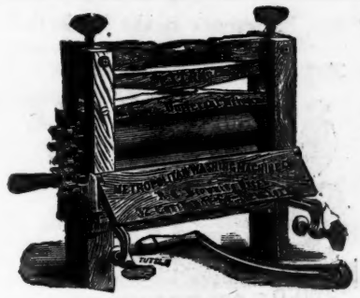

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	Power Required.	*Width of Cut.*	*Weight.*
No. 00,	A Lady,	10 inches,	28 lbs.
" 1, Jr.,	A Youth,	14 "	37 "
" 1,	One Man,	15 "	63 "
" 2, Jr.,	One Man,	16 "	42 "
" 2,	One or Two Men	20 "	75 "
" 2½,	A light Horse (Draft Pole)	30 "	275 "
" 2½,	" " (Driver's Seat and Shafts),	30 "	315 "

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The unsuccessful party to pay all expenses.

ISAAC W. WHITE, President.

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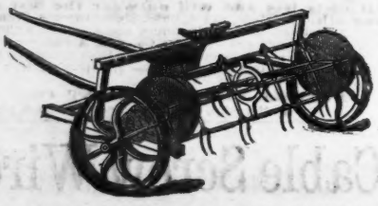

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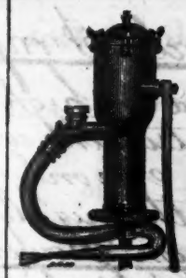

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What Subscribers say about the Chromos.

We have a large number of letters from subscribers who have received the Chromos, expressing their delight in the possession of these beautiful pictures. We give below extracts from a few of these letters. The Chromos are being delivered as rapidly as possible.

"Your beautiful Chromo, 'Mischief Brewing,' arrived safely by mail. I think it must be admired wherever seen, it is so truly excellent."

"Your Chromos are received, and we are exceedingly well pleased. They are both beautiful, but we fancy the American picture. Please accept our thanks."

"The two Chromos, 'Mischief Brewing' and 'The Strawberry Girl,' were received in good order, and are really very pretty and well-finished pictures. They are far superior to the chromos issued by the ————, which I received at the same time."

"The Chromo of the 'Strawberry Girl' came safely to hand this morning. It is the finest gift Chromo that I have seen (and I have seen all of the leading ones). The subject is splendid, just such a picture as I want in my parlor. It will not only fill the hearts of my 'little chicks' with joy, but will afford my wife and myself great pleasure. Could I not duplicate it I would not take twenty dollars for it. You are doing a good work, a Christian work, in supplying so many homes with this 'thing of beauty.' Its presence can not but brighten every household, and make glad the hearts of all who behold it. One 'hearth and home' will remember with gratitude the generous donors."

"Your Chromo of the boy and girl with Jack-o'-lantern (Mischief Brewing) received this day. It is a perfect beauty. My three little boys and one girl are delighted with it—the coloring so soft, the scene so perfect and natural. Accept my thanks for the Chromo and for your very valuable paper, that I have taken many years and shall continue to do so for years to come."

"The Chromo is this day received, and gives the completest satisfaction. There were three or four gentlemen in the bank when the picture was exhibited, and all pronounced it fine. It gives you two new subscribers."

"The Chromo of *Hearth and Home* has arrived, and gives complete satisfaction and delight to all. The position of the little one is as natural as life, while her face is full of beauty, innocence, and expression."

"Our beautiful Chromo, 'The Strawberry Girl,' came several days ago, and we should have acknowledged its receipt ere this, only for want of time. We and all of our friends are delighted with the picture, and the general expression is, 'How can they afford to give so fine a picture?' Receive our sincere thanks for the Chromo, and best wishes for your paper as well as your own personal future good."

"'Mischief Brewing' arrived on the 3d, and immediately commenced brewing mischief, in that no one could properly attend to their work for looking at the Chromo."

"The picture alone, in my opinion, is worth three times the subscription price of *Hearth and Home*, and the latter is a mine of useful and entertaining knowledge."

"The sweet little 'Strawberry Girl' has found her way into our home and hearts. No one could declare the berries 'just paint, arranged to deceive,' for the pretty flushed face tells us plainly that the little lassie has just picked the berries, and is now ready to see how they taste. So natural is it, that I found myself exclaiming, 'How do you do, dear?' before I could realize that she couldn't answer back."

"Your premium Chromo has just been received. Well pleased with it. Thanks."

"I received the two Chromos, and am highly pleased with them; they were beyond my expectations. I am profoundly obliged to you for them. I will try my best now to get as many subscribers as possible."

"It does seem wrong for me to add to your labor by even reading this note, and I at first thought I would not do it. But I felt so mean to receive two such gifts as the Chromos of *Hearth and Home* and *Agriculturist* and not so much as reply with a 'thank you.' I could not stand it any longer since seeing the delight of my subscribers over their Chromo for the *Agriculturist*. Please forgive me for the time it takes you to read this, and the thanks I send with theirs for the splendid presents. 'Truly a thing of beauty is a joy forever.'"

"The premium you give with *Hearth and Home*—viz., 'The Strawberry Girl'—is at hand. I can not but return my most sincere thanks. It is the pride of our household; it is a perfect beauty."

"We have received the Chromo, 'Strawberry Girl,' and are very much pleased with it. Every one who has seen it considers it a beautiful picture."

"I received my picture (Mischief Brewing) and would not take the retail price for it, $5.00."

"Your Chromos are by far the best sent to this place by any publisher. So say all."

"I received the new Chromo sent last week, for which you will please accept my thanks. I think it is a perfect beauty. Every one who has seen it is pleased with it."

"I received the *Hearth and Home* Chromo a few days ago, safe. The almost universal exclamation in reference to it is, 'Beautiful!' 'Lovely!' That face is hard to surpass."

"The Chromo, 'The Strawberry Girl,' was received in good condition. It is a fine thing, and the wonder is, at the rate Chromos are selling, even in New York, that you can send such a one out as a gift to subscribers to *Hearth and Home*."

"I think the Chromos are splendid."

"We thank you heartily for it (Chromo, 'Strawberry Girl'). We look upon it as a gift, considering the paper to be worth more than the price charged for it. Its weekly visits are looked forward to, alike by old and young, with great pleasure. We consider the tone of the paper of the highest order, and the principles inculcated such as can not fail to exert a good influence upon the present and future generations."

"The Chromos are now coming to hand for my subscribers, and as you probably wish to know how they are received, I write to say they give universal satisfaction in every instance, although all my subscriptions were taken for the papers themselves, and are considered worth the money, and Chromos are thrown in. The papers, *Hearth and Home* and *Agriculturist*, in our estimation, are ahead of anything now out for all homes, and should be taken universally."

"Your premium Chromo of the 'Strawberry Girl' for *Hearth and Home* came to hand by mail all right. It is beautiful beyond our expectations, and is really up to and beyond your description of it. We thought some little exaggeration might be allowed, when so many Chromos were in the market, and you had so many competitors. But in this, as well as in your premium Chromo for *Agriculturist*, the one half has not been told. We admire both *hugely*, and thank you most heartily for them."

"I take the liberty of trespassing on your time to thank you for the beautiful Chromo which arrived yesterday. We have taken your excellent paper more than *thirty* years, and in every case have derived many times its subscription price in positive benefit. The picture I shall consider as a *gift* from you. Having spent the most of my youth on a farm, I can truly appreciate the spirit of the scene in every particular, and know that the sturdy and enterprising farmers of our country are but the matured mischief-makers of the picture. With many thanks, I am."

"I am bound to acknowledge reception of my beautiful Chromos. 'Mischief Brewing' came to hand several weeks since, 'Strawberry Girl' the past week—both in good condition. I am delighted with them; the best present I have received in a life-time. Many thanks."

"Please accept my thanks for your beautiful Chromos, 'Strawberry Girl' and 'Mischief Brewing,' as premiums to the *Hearth and Home* and *American Agriculturist*. They are certainly very handsome."

"I received the Chromo, 'Mischief Brewing,' on the 8th inst. It has surpassed my expectations, being a gem of its kind."

"The beautiful Chromo, 'The Strawberry Girl,' arrived in good order, and pleases us all; even our nine-months-old baby crows with delight when he sees her sweet face."

"The two Chromos came to us in good condition. We think them very fine, and thank you for the pleasure we enjoy in looking at them."

"It is a lovely picture, and I thank you for it."

"The 'Strawberry Girl' arrived in excellent condition this afternoon. I am very much pleased with it, and thank you most heartily."

"We think the *Hearth and Home* Chromo is the prettiest one we have ever seen—*perfectly splendid*."

"The *Hearth and Home* Chromo is *very* fine, and the other very pretty and life-like."

"I have to thank you for the beautiful Chromo, received a few days since. It entirely exceeded my expectations."

"We are very much obliged for the Chromo, 'Mischief Brewing,' which came safely this afternoon."

"The Chromo of the *Agriculturist* has arrived, and we think it is very pretty."

"I have received the Chromo, the 'Little Strawberry Girl.' It is a perfect beauty."

"Mamma wishes me to say that 'The Strawberry Girl' has been put into a very handsome frame, and that it makes a very pretty parlor ornament."

"I received my Chromo the other day, and I am very much pleased with it."

"The picture premiums of the *Hearth and Home* are splendid; we admire them very much indeed."

"We think the Chromo which came with the paper is very pretty, for which we return thanks."

"I am the grateful recipient of the two beautiful Chromos, and embrace the very first opportunity of tendering to you my heartfelt thanks for the same."

"Please accept our thanks for the Chromo, 'Mischief Brewing,' received last week. We think it very pretty. Also, —— wishes to thank you for the 'Strawberry Girl.'"

"The *Hearth and Home* Chromo has been received. Please accept a whole household's thanks. All are charmed, from 'the gude man' down to the smallest lad and lassie. We are only sorry we did not subscribe for the *American Agriculturist* with *Hearth and Home*, and thus have secured, at your liberal terms, another good paper and another nice picture."

"We received the pictures—the 'Strawberry Girl' and 'Mischief Brewing'—lately, and are delighted with them, and we wish to thank you for them. Not only are the pictures very beautiful and satisfactory, but all the family have become more interested in pictures of all kinds. We like both papers very much indeed."

"I received the *Hearth and Home* Chromo, and am more than pleased with it. As I am an old bach., and do my own work out-doors and in, the picture will be a great ornament to my old shanty. I have been a subscriber to the *Hearth and Home* since you took charge of it and the *Agriculturist* since 1860. They are all the papers I take. I would sooner live on short rations than do without them."

"It is a very beautiful picture, and worth more than the price paid for the paper Sending out so many fine gifts will certainly bring you thousands of new subscribers. Receive my sincere thanks for the Chromo."

FRAMES
FOR THE CHROMOS.

We have made arrangements to supply frames to our subscribers who may desire them for the Chromos which are now being distributed. Many will no doubt avail themselves of this opportunity to place these beautiful pictures in handsome frames at moderate cost. In all cases where sent by express, the purchaser will pay express charges. The prices of the frames are as follows:

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" 3. Richer Style, Polished " " " 2.75

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" 5. " " " 2¼ " " 2.00
" 6. Belgian Gilt Frame, 2 inches wide..... 2.50
" 7. " " Fluted, 3 " " 4.00

For Hearth and Home Chromo, "THE STRAWBERRY GIRL."

No. 8. Neat Black-Walnut Frame, Gilt Band....$1.40
" 9. Wider " " " " " 2.00
" 10. Richer Style, Polished " " " 3.25

No. 11. Full Gilt Frame, 2 inches wide.....$1.75
" 12. " " " 2¼ " " 2.50
" 13. Belgian Gilt Frame, 2 inches wide..... 3.00
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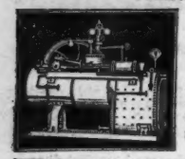

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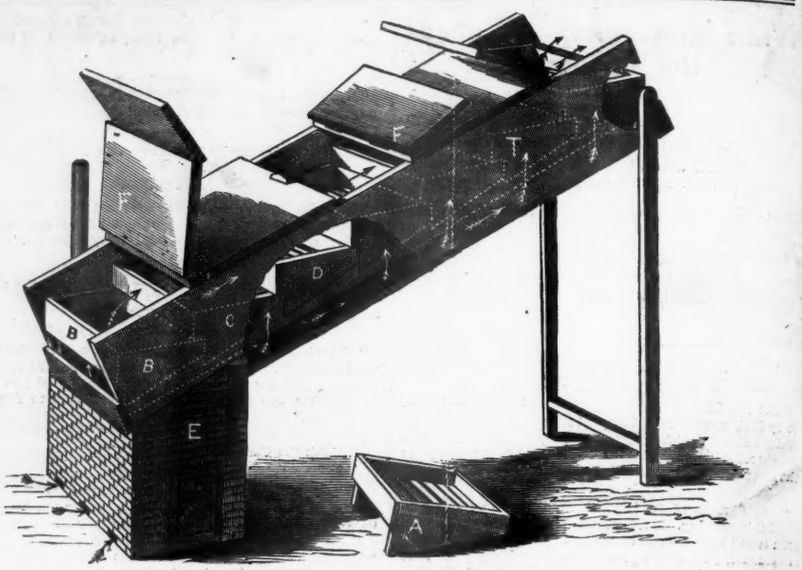

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